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ART. I.—*Spiritus Pyroxylicus in the Treatment of Diarrhea and Dysentery.* By DAVID W. YANDELL, M. D., of Louisville, Ky.

My attention was first called to the use of pyroxylic spirit, or medicinal naptha, in diarrhea, by an article which I translated for the June number of this Journal, contained in the *Gazette des Hopitaux.* There, the efficacy of this agent was so confidently affirmed by Dr. Lavirotte, of Lyons, who, I believe, was the first to use it in this disease at least, in France, that I myself was induced to make trial of it in diarrhea, and by analogy was subsequently led to administer it also in dysentery. The result of this trial I now purpose making known to the profession.

Case 1. *Diarrhea.*—Mr. Johnson, a native of the West Indies, æt. 66 years, was admitted into the Louis-

ville Marine Hospital on July 5th, laboring under phthisis pulmonalis at the third stage, affecting almost the entire left lung. In addition to this he had a copious, frequent and exhausting diarrhea. His skin was hot and dry, cheeks flushed, pulse very quick, tongue coated with a whitish fur; thirst urgent, appetite gone. Ordered six drops of the spts. pyroxylicus to be given three times a day. After having taken six doses the diarrhea ceased. The pulmonary disease, however, continued to progress, and in about three weeks terminated fatally. During the whole of this time the patient's bowels were perfectly regular.

Autopsy. Ulcers, varying in size from that of a dime to three quarters of an inch in diameter, were found at frequent intervals along the intestinal canal, from the pylorus to within an inch and a half of the anus. All of them occupied the entire thickness of the mucous coat, several involved also the muscular coat, and one or two had well nigh caused perforation of the intestine. Of the lesions, offered by the other parts and organs of the body, it is unnecessary to speak.

Case 2. *Diarrhea.*—Among the patients remaining in the hospital at the time I commenced my attendance there on the 4th of July last, was a Pennsylvanian named Martin, a thin, delicately formed man, 26 years of age, who was laboring under a diarrhea of several months' standing. He had taken almost the whole catalogue of astringents; had consumed large quantities of opiates, and had been twice salivated without producing even a temporary arrest of the disease. He was greatly emaciated, excessively feeble, so much so that he was scarcely able to get up to stool, without appetite and without hope of recovery. His pulse was small, feeble and slow; tongue covered in the center with a whitish fur, red at edges and tip. He had had ten, pale, watery dejections in the preceding twenty-four hours. No tenderness on pressure over abdomen, but a doughy feel, such as is said by authors to be characteristic of chronic peritonitis, but which, according to my

experience, is observed also in other chronic bowel affections. Considerable *gargouillement* in right iliac fossa. Micturition attended by some burning; urine high colored and scanty. I prescribed a pill composed of tannin. gr. ij, morph. acet. gr. ¼, camphor gr. ij., to be taken every hour. Injection of tinct. opii and starch: Brandy toddy with a teaspoonful tinct. cinchon. c., occasionally during the day. Flaxseed poultice over abdomen. Hydrarg. cum cret. gr. x., plumb. acet. gr. iv., rhei grs. v., p. ipecac. gr. j., extr. hyoscyam. gr. v., to be made into pills of the requisite size and taken at bed time.

July 5th. Patient expressed himself as feeling no better. Number of discharges not less than on day before. His strength was quite as feeble and pulse no stronger; tongue, however, less coated. Prescriptions continued, increasing the quantity of tannin and substituting an injection of plumb. acet. for the one of tinct. opii, etc.

6th. Conditition unimproved. I now ordered nitrate of silver in small quantities internally in the form of pill and *per an.*, emplast. vesic. over abdomen.

7th. No change except the dark color imparted to the stools by the salt. Increase quantity of brandy, and the patient desiring a bowl of soup was allowed it. Continue prescriptions, adding p. ipecac. c. gr. x. on going to bed.

8th. Condition of the patient materially the same.—Had eight or ten discharges since last visit. Pulse small and very feeble; surface of body cool, extremities cold; countenance dejected, eyes sunken. He refused to take medicine any longer, urging that it did him more harm than good, and that he would die, in at most, a few hours. I now determined upon using the spts. pyroxylic., and prescribed it in doses of ten drops three times a day, which, after much persuasion, I prevailed on Mr. M. to take. All other prescriptions except the brandy were omitted.

9th. Patient had four discharges since previous morn-

ing. Thinks he is better. No perceptible alteration, however, in his general condition unless it be a slight increase in the force of his pulse. Continue prescriptions.

10th. Patient has had but one discharge. Tongue cleaned off. Extremities still cold, and surface of body generally below the usual temperature. Pulse same. Some appetite. Being averse to drinking any more brandy, which, he contends, has been injurious to him throughout, and desiring porter, the latter, with some scruples as to the propriety of the course, was allowed him in its stead.

11th. General expression of patient greatly improved. Has had but one dejection, which was in every respect natural. Porter and soup agreed well with him. The spts. pyrox. was ordered to be given only once during the day. Porter and soup continued, and in addition he was allowed two soft boiled eggs for dinner.

For two weeks the patient continued to improve, when, after too long exposure to the night air, the diarrhea returned with its former violence. The spts. pyroxylicus again cut it short, and the patient is now well. He afterwards died of bronchitis. At the meroscopy the intestinal track was found entirely healthy.

Case 3. *Dysentery.*—Mr. A. F., a farmer, living two miles below Louisville, æt. 46 years, of vigorous constitution, though intemperate habits, was convalescent from a mild attack of cholera. On the morning of the 19th of July, after a restless and uncomfortable night, he was seized, while getting up, with pains in the back, loins, and abdomen, accompanied by a sense of general uneasiness, nausea and intense thirst. Soon after he had a painful and very small dejection of blood mixed with mucus. I saw him in three hours after this time. He had then had fifteen calls to stool. His skin was hot and dry, pulse somewhat accelerated and full; tongue coated with a white fur; thirst; anorexia; cephalalgia; vesical tenesmus; tenderness on pressure over whole course of colon. I pre-

scribed spts. pyroxylicus gtt. x., to be taken in a wine-glassful of water every four hours. 6 P. M. Had but two discharges after first dose of medicine.

20th. 8, A. M. Slept well: no discharges since last visit. Felt so entirely restored that he had been to the field where the hands were digging potatoes, had brought some to the house, had them roasted, and with these and a couple of mutton chops had made a comfortable breakfast. Directing a dose of castor oil should it be necessary, I ceased my attendance.

Case 4. *Diarrhea.*—Sam, an able bodied negro, æt. 25, a blacksmith, belonging to C. Bradley, Esq., over worked himself at the forge on the afternoon of the 9th of August. That evening, about nine o'clock, after a sense of general uneasiness, he had a large frothy dejection, which left him very much exhausted. Thinking the advice of a physician unnecessary he took a dose of a nostrum known in this city as Forwood's cholera drops, and went to bed. He had five evacuations, similar in character to the one above mentioned, between this and morning. I saw him at daylight. He had just left the stool. His countenance was anxious, skin moist but warm, pulse full and quick; tongue covered with a whitish fur; thirst, nausea; pain on pressure over lower part of abdomen: mind flighty, from, I presume, the "drops," of which he had taken a considerable quantity. I prescribed 15 drops spts. pyroxylicus, to be taken every three hours: had a flaxseed poultice applied to abdomen, and directed brandy to be given every hour.

10 o'clock, A. M. Patient easy; one discharge after first dose of spts. pyroxilic. Continued prescriptions and added 10 grs. each of Dover's powder and submuriate to be administered at bedtime.

11th. Patient felt so well at the time he was to take the cal. and p. ipecac. c., that he omitted it. Since previous visit has had but one operation, which was almost natural.

Condition in every way satisfactory. Ceased my attendance.

Case 5. *Diarrhea.*—Mat. Horn, native of Ireland, æt. 21, laborer, admitted into the hospital on July 14th, was attacked on July 9th with pain in the stomach and bowels, followed by diarrhea. Has had from five to eight discharges daily since. *Condition at time of admission*—Skin natural; pulse full; anorexia; thirst; nausea; urine high colored and scanty; tenderness on pressure over epigastrium; *gargouillement* in right iliac fossa; tongue coated, clammy; dejections thin, copious and pale. Ordered spts. pyroxylic. gtt. xij., every four hours: flaxseed poultice to abdomen. Patient improved very rapidly for three days, when the medicine was discontinued. From exposure to the night air the disease recurred, but was again immediately checked by a few doses of the spts. pyroxylicus, and in the course of a short time the patient was discharged cured.

Case 6. *Diarrhea.*—Joseph Klean, native of Germany, æt. 38, a baker, admitted into the hospital on July 18th, laboring under diarrhea of seven weeks' standing. Had from twelve to fifteen yellow watery discharges in the twenty-four hours. Appetite good; surface of body natural; pulse slow and feeble; tongue covered with a yellowish fur; no tenderness over abdomen. Ordered, spts. pyroxylicus gtt. xij. every four hours. On the following morning the patient was better, and in a few days was able to assist in nursing his sick companions.

Case 7. *Dysentery.*—McCollom, marine, æt. 29, was admitted into the hospital on July 11th. Attacked with diarrhea two days before—has had from ten to twelve discharges during the twenty-four hours. Pulse slow and feeble, skin natural; tongue whitish. Ordered small doses of calomel, capsicum, camphor, opium, and brandy every hour.

12th and 13th. Marked improvement in condition of patient.

14th. Stools more frequent; condition same as on day of admission. Ordered, plumb. acet. gr. xx., pulv. opii, gr. v., and pulv. ipecac. gr. x. To be divided into ten powders, and one given every two hours; opiate injection after every discharge. At bedtime patient to take 15 gr. of Dover's powder.

15th. Patient slept well: Four discharges since last visit. Pulse and skin natural; tongue still furred; no appetite. Continue prescriptions.

16th. Passed a restless night; up nine times to stool; dejections small, thin, mixed with blood and accompanied by straining. The irritability of the rectum prevented the injections being retained. Tongue covered with a yellowish brown fur; pulse full and quick; considerable tenderness on pressure over abdomen; distressing tenesmus. Ordered cups over seat of greatest tenderness, followed by a flaxseed poultice, and, internally, fifteen grs. each of magnesia and sulph. sublimat. every three hours.

17th and 18th. Condition of patient materially the same. Ordered, spts. pyroxylic. gtt. xv., to be taken three times aday; poultices to be continued. In twelve hours after this time the disease had begun to ameliorate, and at the visit on the 19th, the patient expressed himself as being entirely relieved. In a few days after he was discharged cured.

Case 8. *Dysentery.*—Mr. Sullivan, laborer, æt. 30, entered the hospital on the 22d of July. Has been suffering for three months with dysentery; has from ten to twelve small, bloody stools during the day; has lost much flesh; appetite good; tongue coated with a white fur; skin natural; pulse slow; abdomen tender on pressure. At the suggestion of a medical friend in the city, I prescribed: ℞. Tannin., gr. xx., p. opii, gr. x., plumb. acet. gr. xxx., submur. hydrarg. gr. x.: M. To be divided into twenty-four

powders, and one taken every two hours. Poultice to abdomen.

23d. Condition unaltered. Continue prescription.

24th. Six stools since visit. Ordered spts. pyroxylic. gtt. xij. three times a day.

25th. Has had three dejections; less tenesmus, less straining; tongue cleaning off. Complains of flatulence, for which I prescribed a pill composed of 1 gr. of ext. hyoscym. and gr. ss. of p. ipecac. to be taken every hour until relieved.

26th. Had six or seven stools. Increase the spts. pyroxylic. to xx. drops. The patient improved for a day or two under this treatment and then grew worse again. I persisted in the use of the spts. pyroxylicus until the 6th of August, when, finding that its influence over the disease was only temporary, I resorted to Hope's mixture, and under this and the hyoscyam. and ipecac, to relieve the flatulence, and Dover's powder at bedtime, the patient is improving. He is at present taking some of the chalybeate preparations, and gives promise of being soon entirely well.

Case 9, is one of dysentery, which has continued with unabated violence, notwithstanding every remedy which I have used. The spts. pyroxylicus, carried as high as thirty drops at a dose, and repeated three times a day, has been entirely ineffectual.

Case 10, except that it is of more recent date, is, in its main features and result of treatment, similar to case 9.

Case 11, is one of chronic diarrhea, in which the spts. pyroxylicus in large doses proved wholly inefficient, and which afterwards yielded in the course of a very few days to tannin, opium, calomel and acetate of lead.

Case 12. *Diarrhea.*—Syptoms, with the addition of tenderness over abdomen, similar to those of Joseph Klean. Treated successfully by the spts. pyroxylicus in

doses of fifteen and twenty drops, and flaxseed poultices to abdomen.

Case 13. *Diarrhea.*—Jacob Ricker entered the hospital on the 9th of August, suffering from diarrhea and chronic rheumatism, affecting articulations of left side. Has between six and ten dejections during the twenty-four hours. Much emaciated, very feeble, no appetite; surface of body natural; pulse small, weak, 112; tongue furred; no tenderness on pressure over abdomen. The spts. pyroxylicus was given in doses of twelve drops, three times a day, for several days, without producing any appreciable effect on the bowel disease. The ordinary treatment was now adopted and continued for about an equal length of time, with like result. I determined to give the spts. pyroxylic. another trial, and, accordingly, ordered twenty drops to be taken every four hours. At the end of a few days the diarrhea was cured.

Case 14. *Dysentery.*—Odrad, an epileptic, for a long time an inmate of the hospital, was attacked about the middle of August with dysentery. The disease was accompanied by some febrile reaction. The tenesmus was almost constant. There was considerable tenderness, excited by pressure over the whole course of the colon, and also in other parts of the abdomen. Complete anorexia; distressing thirst. The spts. pyroxylicus, although administered for several days in doses of thirty drops, at intervals of four hours, proved entirely inefficient. I may remark that other remedies have since been used for a greater length of time without arresting the disease.

Case 15. *Diarrhea.*—Hoffman, after having labored under diarrhea and infiltration of the cellular tissue of left side for five or six weeks, was received into the hospital early in August. At time of admission his skin was pale; surface of body cool; pulse small and feeble; no tenderness over abdomen. Had five or six watery dejections during the day, and not less during the night. An-

orexia; no thirst. Tongue pale and flabby. The spts. pyroxylicus given at first in small and afterwards in larger quantities, produced no change in character nor diminution in number of dejections. Other treatment was substituted, under which patient improved.

Case 16. *Diarrhea.*—Armstrong, convalescent from a severe attack of parotitis, exposed himself to the sun, and was seized the following morning with diarrhea. I gave him twenty drops of the spts. pyroxylicus, in a few hours after taking which the discharges ceased. The next day he was admitted into the hospital complaining of excessive weakness and inability to work. He had no appetite; his skin was hot and tongue furred. I prescribed ol. ricin. ℥ j., which developed the diarrhea anew. Two doses of twenty drops each of the spts. pyroxylicus relieved him in a few hours.

Case 17. *Diarrhea.*—James Hughes, a robust Irishman, æt. 24, entered the hospital on the 13th of August. Seven days before he had a severe chill, followed by some febrile reaction. Copious fecal discharges, accompanied by griping, now supervened. The dejections soon became small, slimy and mixed with blood, and numbered from ten to twelve during the day. On day of admission his tongue and skin were natural; abdomen excessively tender; tongue heavily coated; had had nine dysenteric dejections in the preceding twenty-four hours.

Ordered hydrarg. chlorid. mit. gr. x, p. opii, gr. ij; flaxseed poultice to abdomen; laud. and starch enema after each discharge.

14th. Patient slept well; five stools since visit; tongue pale and flabby; pulse 72, full; tenderness of abdomen diminished. Twenty drops of spts. pyroxylic. were ordered to be taken three times a day. Continue poultice. Omit enema.

15th. One stool since visit; tongue, skin, and pulse natural; some appetite. Patient continued to improve

and was on the eve of being discharged, when, during the night of the 20th, he was attacked with a very profuse diarrhea. Had had ten discharges when I saw him on the morning of the 21st. His skin was hot, pulse slightly accelerated; tongue furred; thirst; anorexia; no tenderness over abdomen. Prescribed spts. pyroxylic. gtt. 20, to be taken every three hours. Diet.

22d. Has had eight dejections. Condition same. Continue medicine.

23d. Has had one stool, which was in all respects natural.

24th. Discharged.

Case 18. *Diarrhea.*—J. Mooney, æt. 21, admitted on 21st Aug. Had had diarrhea for four days. Twenty thin, pale dejections in last twenty-four hours. No appetite; tongue covered with a whitish fur; pulse and skin natural; *gargouillement* in both iliac fossa; some tenderness over abdomen. Ordered spts. pyroxilic. gtt. xx every four hours; diet.

22d. Had seven dejections last night. None during day. Continued medicine.

23d. Had no calls to stool till night, when he was up three times.

24th. Convalescent.

Case 19. *Dysentery.*—After having finished my visit at the hospital on the morning of the 20th of August, I was desired to return to see Mr. Morin, who had just been admitted for what was said to be cholera. He had been found a few hours before in one of the streets near the river, so much exhausted that he was unable to stand up, and purging every few minutes. I learned from him that about three weeks ago he had a severe attack of diarrhea, from which he partially recovered. Six days ago the disease recommenced, accompanied by cramps in the stomach, nausea, headache, and pains in the back. The dejections were at first unattended by pain, were loose.

pale and copious. Gradually, however, griping came on, which soon became so distressing that he could hardly leave the stool, and the discharges were small, bloody and excessively offensive.

When I saw him he was so weak as scarcely to be able to turn over in bed. His skin was hot and dry; pulse 108, full and hard; tongue red at edges and tip, coated in center; urine high colored and scanty; has had innumerable stools in last twenty-four hours, attended with much pain, and bloody; abdomen painful on pressure. Ordered cups over seat of pain, followed by a warm poultice; laud. and starch injection after each discharge; spts. pyroxylic. gtt. xx every four hours.

21st. Patient says he has been to stool every fifteen minutes, though only twice was the call accompanied by pain, or the discharges bloody. Surface of body warm, bathed in perspiration; tongue covered with a white fur; pulse 122, but soft; tenderness over abdomen continues. Continue poultices, injections, and spts. pyroxylic.

22d. Has had ten dejections, only one of which was painful. Tongue still coated; skin and pulse natural; no tenderness over abdomen. Omit poultices, continue injections, and give of spts. pyrox. in ten drop doses every hour.

23d. Had eight discharges since visit—a few of them were attended by griping. Skin and pulse same; tongue still coated, though less so than yesterday; thirst; no appetite. Continue prescriptions.

24th. Had some discharges; no griping; skin and pulse same; tongue cleaned off; some appetite; thirst still continues. Ordered spts. pyroxylic, gtt. x every hour.

25th. Number and character of discharges same; rested badly; complains of exhaustion; no appetite; tongue again coated; abdomen presents doughy feel noticed in another case. The spts. pyroxylic. was now omitted; pil. hydrarg. in combination with opium was administered;

in the course of the next twenty-four hours there was a marked amelioration in the condition of the patient. The disease, however, still continued, and in a few days was not less alarming than before. The diluted sulphuric and nitric acid were substituted for the blue mass and opium, and the patient is at present convalescent.

Case 20. *Diarrhea.*—A German, who entered the hospital to be treated for phthisis, was attacked some days after with very profuse diarrhea, accompanied by well marked febrile disturbance. His face was flushed, skin hot, mouth dry; no tenderness on pressure over abdomen. Dejections thin, copious and frequent. Prescribed spts. pyroxylic. gtt. xx every three hours. In twenty-four hours after the diarrhea had ceased entirely.

Case 21. *Diarrhea.*—A hospital patient, convalescent, from intermittent fever, was seized with diarrhea. The dejections amounted to as many as ten or a dozen in the twenty-four hours. The spts. pyroxylic. administered in same doses as above checked the disease in less than twelve hours.

Case 22. *Diarrhea.*—Mr. Patterson, an Englishman, under treatment in the hospital for salivation, produced by greasing his pants with mercurial ointment in order to rid himself of vermin, with which he had been much annoyed, was attacked with diarrhea. The disease created no febrile reaction, was unaccompanied by tenderness of the abdomen, and did not affect his appetile. The spts. pyroxylic. in twenty drop doses given every three hours greatly mitigated, without, however, entirely arresting the discharges. In a couple of days the disease recommenced, and continned, notwithstanding the exhibition of spts. pyroxylic. in large quantities at frequent intervals, until I finally changed the treatment, soon after which the patient grew better.

Case 23. *Diarrhea.*—Late in the evening of one of the last days of July, I was called to the country. The

nights were unusually cool for the season. While returning home I became chilled, and a short time afterwards went to bed with a slight fever. I rested badly, and awoke in the morning with a diarrhea. The first discharge was copious and watery, and left me much exhausted. I immediately swallowed fifteen drops of the spts. pyroxylic. in a glass of brandy and water. The indications for the use of stimuli being present, I took small quantities of brandy at short intervals. At 12 o'clock, M., I had another discharge similar in character to the first. I repeated the spts. pyroxylic. There being some tenderness over abdomen, my friend Dr. Breckinridge, suggested the use of dry cups. They were applied and afforded much relief. Having no appetite, much thirst and slight febrile disturbance, I took at bed time fifteen grs. of pil. hydrarg., eight grs. of ext. hyoscyam., and one gr. of ipecac. After the operation of the mercury on the following morning, I felt no more uneasiness of bowels or tenderness over abdomen, and that evening was sufficiently restored to visit my patients.

The dose of the spts. pyroxylic., as stated by Christison, is five minims, and "is conveniently given with a drachm of compound tincture of cardamom made into an ounce mixture with water merely." I have found this combination unnecessary, its taste when diluted with water being comparatively but slightly unpleasant.

I am of the opinion that five minims is much too small a dose, at least when given in diarrhea or dysentery. It will be remarked that I have varied the dose of the medicine in different cases. I commenced by prescribing it in the quantities used by Dr. Lavirotte, and in some instances with the happiest effect. In others again, however, I was obliged to increase the amount before any good results were manifest. It appears to me from my brief experience with the remedy, that it is most fre-

quently efficacious when given in doses of twenty drops at intervals of three hours.

It will be remembered that the pyroxylic spirit, under the incorrect designation of *naphtha*, was highly extolled a few years ago by Dr. Hastings, as a remedy for pulmonary consumption; "and has since come into general use as a paliative for that disease, and also as a powerful antiemetic drug in cases of obstinate vomiting."

According to the Editor of the Pharmaceutic Journal. the naphtha of Dr. Hastings is not pyroxylic spirit, but pyro-acetic spirit, acetone, or hydrated oxide of mesityle of Kane, (C^6 H^5 O + aq.) But all the so-called medicinal naphtha of the Edinburg shops, obtained from London, is pyroxylic spirit." (Christison.) This is true also, I imagine, of the naphtha sold in the drug stores of our own country.

It is prepared, according to Dr. Ure, by uniting the crude pyroligneous acid with lime, and then distilling the pyrolignite of lime, which yields about one per cent. of crude spirit. The spirit is purified by repeated distillation from quick lime. It is then a pale straw-yellow, mobile fluid, of a powerful penetrating odor of wood smoke. (Christison.)

In the Medical Examiner, for August, I notice a communication by Dr. Henry T. Child, of Philadelphia, on the use of this remedy in cholera. He details four cases, the following abstract of which may not be uninteresting:

Case 1st, had had diarrhea for five days. Opium, kino and camphor arrested the disease for a few hours. At the expiration of this time, patient was attacked with vomiting of "rice water" and copious watery diarrhea. His pulse was small and corded; eyes sunken; countenance and hands shrivelled. Fifteen drops of the spts. pyroxylicus were taken; the vomiting, which had been incessant, cased immediately, and did not return. The cure was completed by the exhibition of mercury.

Case 2d. had labored under diarrhea for six hours.

The discharges assumed the characteristic "rice water" appearance, and there was vomiting of a similar fluid. Ten grains of calomel and fifteen drops of the spts. pyroxylicus were given every hour—one dose each half hour. Vomiting immediately checked and did not return; in three hours the dejections became bilious. Convalescence rapid.

Case 3d, had had diarrhea for two days. Was in a profuse cold perspiration; no pulsation in radial artery; briefly, all the symptoms of fatal collapse. A *teaspoonful* of spts. pyroxylicus was given; to be followed in fifteen minutes by submur. hydrarg. gr. xv.; the dose to be repeated every fifteen minutes. Convalescent next day.

Case 4th, was attacked suddenly with watery diarrhea and nausea. Spts. pyroxylic. was prescribed in doses of ten drops, hydr. submur. in five gr. doses every hour.

It will be observed that in the above cases the spts. pyroxylic. was combined with calomel. In those that I have reported, the remedy was tried single handed, though followed, it is true, whenever indicated by medicines calculated to correct the disordered secretions.

Touching the *modus operandi* of the spts. pyroxylicus, I confess myself totally at a loss to determine. I can but ask, with Dr. Lavirotte—Does this medicine act like opium and the other calmants, as alum and colombo, and the other astringents, as nitrate of silver, by substitution, or rather has it a special action which modifies the intestinal secretion? It is too easily borne to warrant its being compared to nitrate of silver; and its antispasmodic properties are, to say the least, very insignifiicant; while its nanseous, sharp and bitter savor would seem to indicate that it exercised an astringent influence.

On this subject Christison speaks as follows: "Its actions have not yet been carefully investigated; but it seems to be narcotic, sedative, and calmant. It certainly possesses the property of allaying the cough and febrile excitement of phthisis pulmonalis; but general experience

has not borne out the sanguine hopes entertained by Dr. Hastings of its efficacy as a remedy in that disease. I can amply confirm all that has been said of it as an anti-emetic remedy in cases of chronic vomiting; for in cases of this affection, depending on both functional and organic diseases, I have frequently seen the vomiting arrested or greatly mitigated by pyroxylic spirit. Even creosote has appeared to be scarcely as efficacious."

It will be oberved, however, that he does not allude to its use in the treatment of diarrhea.

The object of this paper has been to call the attention of the profession to this agent in the treatment of two of the most common of bowel diseases, in order that its virtues might be fully tested. I am well aware that the first requisite for a successful comparison of therapeutic or other results, is a sufficient similarity between the number of collated cases, and in addition to this, to use the language of a distinguished Parisian physician, "the data must be numerous, collected at different times, in different places, and, if possible, by several observers." For "it is easily seen," he continues, "that the results of a number of facts too limited, collected in a short space of time, in a single place, and by a single observer, however exact as regards that series of data, may yet be very different from, or even the reverse of conclusions drawn from a larger series and one collected under various circumstances."

I have prescribed the spts. pyroxylicus with marked success in several cases of bowel disease occurring in children.

I am at this time treating both in the hospital and in private practice, a number of cases of diarrhea and dysentery, with this agent. My success in these and in some other cases that I have omitted in the present communication, I purpose publishing in some future number of this Journal.

ART. II.—*Report of a Case of Hydrophobia, which occurred in Louisville, Ky.* By R. C. HEWETT, M. D.

The perfect mystery that has always surrounded cases of hydrophobia and the absolute absence of anything like known remedial means, coupled with the fact that the following is the only instance that has occurred in Louisville during the last six or seven years, justify a record and preservation of all the facts and phenomena that could be observed in the case. Though there may be no fact developed that can lead to valuable results, it must still be interesting to medical men to look at the terrible features of this awful malady, in every new case that may appear, to see if perchance some clew may be discovered by which its obscurity may be unshrouded.

The subject of this report was a patient of Dr. G. W. Thum, who attended him assiduously to the close, with Drs. Donne, M. Thum, Flint, and Hewett in consultation. Numerous other physicians of the city saw the case during its progress. The autopsy was most skilfully conducted by Dr. T. G. Richardson, assisted by Mr. J. Bartlett.

July 25th, 1849. Robert Adams, laborer, aged about thirty-two, dark complexion, stout, healthy looking, in attempting to drive off a large dog that seemed to be fighting a number of others. was bitten by him on the third phalanx of the right middle finger. This was about ten weeks ago as near as can be ascertained. The dog was considered rabid by all who saw him, and was killed. (It will not be irrelevant to mention in this connection, that one of the dogs bitten by this one, gave unequivocal signs of madness on the 30th inst.) Three days after receiving the bite, the patient called on Dr. Thum, who applied lunar caustic freely to the wound, which penetrated to the bone. No further complaint was made until

this morning, when he sent for Dr. T., who found him with slight pain in the right shoulder blade, throbbing, uneasy sensation in the occipital region, hot, dry skin, langour and indisposition for exertion. He had taken breakfast as usual. Nothing was said at this time about the hand or arm. An emetic and warm pediluvium were ordered. In the afternoon the Doctor was sent for in haste. He was informed that the patient drank water for the last time at noon but ate nothing; attempts to swallow the emetic produced difficult, spasmodic breathing, and similar effects attended an attempt to put his feet in the warm water. Beginning to suspect hydrophobia, inquiry was made about the bitten finger, when he learned that for two or three days previous there had been pain in the dorsum of the metacarpal bone corresponding to it. This pain extended gradually up the arm to the shoulder to such a degree that the limb had been suspended in a sling. He was offered water to drink but said he could not swallow it, and turned away in evident distress. Water poured from a pitcher near him affected him in a similar manner. The inhalation of chloroform was ordered when spasmodic breathing comes on.

9 o'clock, P. M. Visited the case with Dr. Thum.—Found the patient composed; face somewhat flushed; pulse about 90, full and regular; sighs frequently; mind not in the least disordered; tongue rather pale, slightly furred and moist; no thirst; no unnatural appearance about the cicatrix or arm; complains occasionally of chilliness; cannot swallow either solids or fluids, and has an evident dread of the latter, so much so that an enema cannot be used. No evacuation from the bowels yesterday nor to-day; complains of pain in the right shoulder, none now in the hand nor arm; but stiffness and pain in the back of the neck. The sight or sound of water produces distress, groaning and irregular spasmodic breathing. A small phial of chloroform in my hand or a sudden

puff of cool air, a small piece of ice placed in his mouth, fanning, or any one, particularly a stranger, entering the room suddenly, produces groans and a gasping oppressed respiration: can perform the mere act of deglutition if there be nothing but saliva in his mouth; no desire for food; eyes have a rather unnatural, glistening appearance. Says that for five months past his skin has been subject to become very unusually dry, which made him feel miserable and very nervous until free perspiration was produced. Thinks all his present symptoms arise from playing at ten-pins for several days past. Calomel grs. x., to be placed dry on the tongue, and if it does not operate in six hours to be repeated with croton oil, gtts. ij; chloroform to be inhaled when the breathing becomes difficult, and perfect insensibility to be produced if great restlesness or general spasms come on. All exciting causes to be kept from him with special care.

July 26th, 8, P. M. Has passed a restless night, seemed to sleep once for a few minutes, but soon started up in distress. Bowels have been freely evacuated; passes urine in sufficient quantity but highly colored; pulse 80 and less full; applies frequently to his nose a handkerchief moistened with a little chloroform, which seems to speedily relieve the spasmodic breathing; face less flushed; shoulder easy but pain is felt now in the whole length of the spine. In other respects his condition is not materially changed since last evening. Blister the whole length of the spine; ung. hydr. to be rubbed into axilla and thighs, and chloroform continued as before.

1, P. M. Seems to be better. Perfect insensibility has been produced once since morning, to allay great excitement and distress produced by the door being suddenly blown open. Found him sitting on the side of the bed inhaling chloroform from the handkerchief which he holds constantly in his hand. Asks frequently for more chloroform. Pulse nearly natural; says he feels better;

can take a small piece of ice enclosed in linen, in his mouth for a few moments at a time, but if continued too long his breathing becomes affected, somewhat as any one's would be by a plunge into cold water. Has had ten or twelve green evacuations from his bowels; passes urine frequently and high colored. Thinks he could swallow some mush. Treatment continued.

8, P. M. Decidedly worse. Complains greatly that persons will persist in seeing him, and is most violent in his abuse of them; entreats us to keep them away. A violent paroxysm was produced this afternoon by the presence of one whom he disliked. Complains of thirst for the first time; pulse increased in frequency; has taken about one teaspoonful of the mush; said, when I first entered the room, "oh! Doctor, I am gone!" asked for a lemon and sucked a slice of it for sometime. He is much more irritable and captious, and frequently scolds his wife and attendants. Has an especial dislike for the child, and complains that it is not kept so far away that he cannot hear it speak. Turns his face away at first, from those entering the room, and will not permit them to speak until he has spoken. When anything happens disagreeable to him, his manner becomes hurried, his respiration agitated and accompanied by groans, and he frequently exclaims, "oh, there it is, I said so." Chloroform and ung. hydr. to be continued, and sulph. morph. to be applied to the denuded surface of spine.

July 27th, 8, A. M. He is evidently much worse. Has been removed to a room on the second floor. Has been very restless, and sometimes raving through the night. Says he has eaten about half a cracker. Manifests now a fixed antipathy for several persons, particularly his wife and child, whom he will not see; says this feeling for his wife came over him suddenly last night, and implores us to give him something to stop it. Will not suffer his female attendant to speak to him even in reply. Became

ungovernable for some time early this morning; kicked the foot-board of his bed furiously and tried to kick one of his attendants; seemed perfectly conscious of his condition, and asked to be confined in a strait jacket. When we arrived he became more composed, but his manner was hurried and agitated and his face and eyes have assumed a wild, highly excited and distressed expression. Talks constantly and rapidly, for the most part making complaints of his attendants and of persons and events that have been disagreeable to him during his illness. He now emits occasionally thick, frothy saliva. Much thirst, but cannot swallow anything, except so much of the ice as melts in his mouth when he applies it for a moment to his tongue. Occasionally talks cheerfully and even smiles. Breathing now almost constantly short, irregular and panting; pulse 125 and becoming weaker; skin moist. At one time says the room is hot enough to kill him, and at another complains of the chilly air. Tongue and mouth have a whitish, clammy appearance. Refuses to have the strait jacket on, and says he spoke of it this morning because he was worse and thought we had given him up. Requires all who come to his room to be announced at the door and not to speak until he first says something. When we enter the room we must take a seat at some distance from him until he choses to order us nearer, and when we approach him he always extends his hands to us: is mostly rational but occasionally his mind loses its balance: Insists that the bite of the dog did not produce his illness, but that some one has poisoned him. Continue chloroform at intervals, to produce insensibility, and apply opium cerate to the spine.

1, P. M. Symptoms still more aggravated. He is exceedingly restless and cross, and disposed to quarrel with all his attendants. Sprang from his bed and drove his female nurse in terror from the room. Spits almost continually a white, frothy saliva; hands very tremulous; free

perspiration; pulse 132; respiration and deglutition as before. His dread or abhorrence of females is a very prominent symptom; will not suffer one to come near him, and commands them to be driven from the house; ordered some bonnets and other female apparel that hung on the wall, to be removed from his sight. Sends messages occasionally to his wife with but little meaning in them, but will not permit her to see him. Becoming much less manageable. He accidentally got possession of a small piece of board and without looking round threw it violently over his shoulder at some one standing behind him. Becomes highly impatient and irritated if his attendants do not answer him instantly and execute his orders with dispatch. His complaints are becoming very clamorous; is constantly ordering some one to leave the room or some one to come to him. Would not permit the cerate to be applied, and will not suffer the strait jacket to be put on; says we need not fear he will bite any of us. His looks and manner are a mixture of fear or suspicion and rage. He has not taken any fluids for now more than two days, has raging, burning thirst, but still turns from water and seems to dread it as if it were the most deadly poison. Through neglect of the attendants he happened to see several persons whom we had engaged to assist in applying the jacket, when he immediately became extremely boisterous and commenced raving at his two nurses.—Whilst we were in the adjoining room in consultation, we heard loud, piercing screams and oaths, the door flew open and the attendants rushed out in rapid retreat, followed by our patient, whose expression was surely the most horrid the human face can assume; his eyelids dilated, eye wild with rage, lips parted wide and teeth firmly clenched, arms elevated and extended before him, and every feature and line of his face expressing the most intense fury. He was immediately seized, insensibility produced by chloroform, and a strait jacket put on. A

considerable quantity of frothy saliva flowed from his mouth. In a few minutes consciousness returned and he was composed and quite rational. To be quieted with chloroform at intervals until our return.

7, P. M. More composed; talks less, but insists on having the jacket off; is less affected by cool air and the sight or sound of water; much less saliva ejected; pulse 130 and weak. Threatens us with vengeance if we do not release him; knows every one, but occasionally makes an incoherent remark. We wished him to take some ice-cream but the proposal produced distress; said he could not swallow it and would not try unless his arms were liberated. He finally consented to make the attempt; a spoonful was offered, and, with evident signs of distress, he looked steadily at it for some time and then made a sudden snatch at it with his mouth, but barely touched the spoon, turned his head convulsively away, with groans, gasping respiration and awkward efforts at deglutition. Sometimes he would thrust his tongue as far out as he could on one side of his mouth, in the direction of the spoon, and at the same time seemed to be making efforts to avert his face and eyes. Complained for the first time of pain in the abdomen, and said he would burst if the jacket were not removed. It was determined to produce insensibility with chloroform, and as consciousness began to return to give him the cream. This succeeded, and he took eight or ten teaspoonfuls which he swallowed or rather gulped down with some effort; seemed to like it, and wanted more, but as the sedative action of the chloroform wore off, would not take it. The chloroform was repeated; more cream was taken, and he asked for fried ham. At this time he was mostly rational, but made frequent threats. Injections of beef-tea; insensibility to be produced at proper intervals, and ice-cream or any other food he might be able to take, to be given.

10, P. M. Evidently dying. One injection had been

given; he had taken some ice-cream and about two ounces of the ham, but soon after the latter, his attendants say, he commenced vomiting, had a slight spasm, seemed to go to sleep, but soon awoke, to die. His eyes are fixed; pupils immoveable, but neither much contracted nor dilated; breathing convulsive; tongue protruded; pulse rapidly sinks, and, without further struggle, death terminates his sufferings.

Autopsy, 14 *hours after death.*—Body rigid. Pharynx deeply congested throughout, the purple color ending abruptly at the commencement of the œsophagus; mucous follicles much enlarged; œsophagus unchanged; mucous coat of the stomach slightly injected, and small spots of ecchymosis in its greater extremity; stomach contained about three quarters of a pint of reddish brown fluid; the mucous membrane of the upper two-thirds of the duodenum deeply congested; that of the ileum of a pinkish hue throughout, with occasional spots of decided inflammation; the general redness extends slightly to Peyer's and the solitary glands, and the latter, near the termination of the ileum, are much enlarged and surrounded by a red areola; mucous coat of the cæcum and beginning of the colon much injected; remainder of the large bowel perfectly healthy, and contains a small quantity of dark brown, semi-fluid feces; spleen much enlarged from previous disease, but otherwise healthy. Liver perfectly natural. Kidneys gorged with blood of a venous hue. Bladder empty, and its mucous lining raised in two or three points by bloody effusion. Inferior cava distended with semi-coagulated blood. Semi-lunar ganglia perfectly healthy. Mucous membrane of the larynx, trachea and larger bronchial tubes of a deep purple hue and covered with frothy, bloody mucus. Upper lobe of the right lung much congested. Heart perfectly healthy; its left side entirely empty and the right contained a small quantity of frothy blood. Veins of the dura mater great-

ly distended with fluid blood. No fluid in the arachnoid sac. Substance of the cerebrum perfectly normal. Lateral ventricles contained about half an ounce of bloody serum. Veins of the surface of the cerebellum, medulla oblongata and pons varolii distended with blood. Substance of the cerebellum much less consistent than usual, but no redness. Substance of medulla oblongata and pons perfectly natural.

Time was not allowed to make a thorough examination of the spinal cord, but a section of its upper dorsal portion disclosed considerable vascular fulness of its investing membranes, and its substance to all appearance natural.

Remarks.—The leading characteristic of this case was high nervous excitability, and the nerves of sensation were seemingly much more affected than those of voluntary motion. This condition gradually increased in intensity until within a few hours before death. The mental faculties were mostly unimpaired, but at times, especially towards the close, they were disturbed and somewhat perverted. In my observation there were no general spasms at any time and all the voluntary muscles were perfectly obedient to the will, excepting those concerned in respiration and deglutition. The latter organs apparently, sustained the principal force of the disease; and in whatever way an exciting cause acted, whether as a disagreeable impression on the skin, or an offensive sight or sound, or an effort to swallow solids or fluids, but especially the latter, the respiratory function was the first to complain, and, in fact, seemed almost exclusively to suffer.

It is well ascertained that not more than one in twenty-five of those bitten by rabid animals ever has symptoms of hydrophobia, and this, in connection with the fact that in the present instance there had been a peculiar and unusually unhealthy, nervous state for some months prece-

ding the accident, might suggest an inquiry, whether the virus, unaided by some morbid condition of the health, would develop the disease?

How far the morbid post mortem appearances were essential elements of the disease or were mere effects of it, modified or even produced by the treatment, I cannot pretend to determine. The highly congested condition of the pharynx, and the abrupt termination of the purple color at the œsophagus; the fact that the earliest symptoms in this case implicated this part, and that many writers mention somewhat similar appearances both in man and the dog, authorize the belief that this state of the pharynx is an essential part of the malady.

The July number of the London Lancet, for 1849, contains an account of a case of hydrophobia, in which the writer says: "The pharynx, throughout its whole extent, was of a deep, dusky red color; and the mucous follicles enlarged, so as to present, at first sight, the appearance of large aphthæ; that these were merely enlarged follicles, the scalpel proved. One circumstance requires especial notice—the abrupt and marked limitation of the congestion or inflammation, whichever it was, to the pharynx itself, between which and the top of the œsophagus the boundary was as distinct and defined as the line of separation in gangrene."

A phrenologist might perhaps be disposed to connect, in some way, the early and excessive antipathy for the child and the perfect dread or abhorrence of females, that so strangely marked the later stages, with the evidently diminished consistence of the cerebellum.

It surely cannot be that hydrophobia is necessarily a fatal disease, though the records of the profession, with fearful uniformity, seem to lead to such a conclusion.—Chemistry and Physiology will yet disrobe it of its terrors. There is a case of hydrophobia from the bite of a cat, reported in Braithwaite's Retrospect, No. xviii., in which

a cure is said to have been effected by the use of chloroform. In our case a fair trial of this agent was not made on account of the absence of regular and skilful nurses; and the circumstances of the patient and the curiosity of visitors, exposed him to exciting causes, which almost incessantly counteracted the salutary sedative action of the chloroform. But so far as it was used, its effect was decidedly beneficial, allaying speedily the spasmodic breathing and producing calmness in the midst of violent paroxysms of excitement. It had the advantage of being readily and willingly inhaled, and produced all the effect we desired, when medicines by the mouth could not be swallowed, and even endermic medication was resisted. If it would do no more than enable a doomed man, as in this case, to enjoy the luxury of a few spoonfuls of ice-cream, when he is parched and consumed by thirst, and soothe the sufferings of the few hours he can live, it is a valuable remedy.

If a case of hydrophobia should now come under my care, I would insist on the most perfect seclusion, with faithful nurses and a vigilant avoidance of all exciting causes; chloroform should be used at suitable intervals to calm the nervous excitement, and appropriate local treatment directed to the condition of the pharynx.

Art. III—*Report of Cases.* By B. I. Raphael, M. D., Attending Surgeon to the Louisville Marine Hospital.

Case I. *Depression of Skull—Trephining.*—Geo. Goldthorp, æt. 29, boatman, born in England, was admitted in the hospital, May 23d, 1849. About nine months ago he received an injury of the head, caused by the falling of a spar. The scalp was laid open to the extent of nearly three inches, and a portion of the *left* parietal bone depressed; the fracture being about one a half inches in length, parallel with the sagittal suture, and one inch

from it, half an inch in breadth, and one-fourth of an inch in depth. No attempt was made at the time of the accident to raise the depressed bone. For six weeks he had hemiplegia of the *right* side, accompanied by loss of speech. His ideas were not incoherent, but he was unable to communicate them by any possible means to another. He knew the letters of the alphabet, and could mentally connect them into words, but it was impossible for him to write words of even one syllable. It always appeared to him that there was a great weight on his head, "like," as he expressed it, "a thousand of brick." His urine was secreted in great abundance, and of a very muddy color; micturition had to be performed six or seven times during the night.

Besides these symptoms, he has had two epileptic attacks; one about three, and the other about four months after the occurrence of the accident. He has also had frequent symptoms of an approaching paroxysm. His bowels are always costive, and are only moved when acted upon by some cathartic medicine. The history of the case, so far, was given by the patient himself, and he desired that an operation might be performed. He was well aware of the danger attending it, but said he would rather risk his life than have another epileptic attack.

Actual condition, July 10, 1849.—Depression of the *left* parietal bone, situated one inch from the median line, and two inches beyond the coronal suture; its measurement as follows: one and a half inches in length, half an inch in breadth, and about one-fourth of an inch in depth. Pupils: the left one natural, the *right* slightly dilated, and the iris more sluggish in its movements than that of the opposite side. Pulse 94, full, soft and regular; tongue healthy; bowels constipated. Partial hemiplegia of the *right* side, with diminution of temperature.

Operation.—At 12, M., I performed the operation of trephining after the usual manner, in the presence of my

friends, Drs. Gross, Richardson and others. The skull was half an inch in thickness, and the depressed portion had left a corresponding impression on the dura mater, to which it was also slightly attached. No hemorrhage of any consequence followed the operation. The patient expressed himself as feeling better, so soon as the depressed bone was removed. Pulse the same as before the operation. An hour after, the flaps were drawn together with adhesive strips, cold water dressing was applied, and a purgative of calomel and rhubarb administered.

11th, 10 A. M. Pulse 90, soft and regular; tongue healthy, skin moist; both pupils of the same size, and natural; some thirst; pain above the eyebrows; and a feeling of soreness in the paralyzed side. The medicine which he took yesterday had operated well.

Cold applications to the head continued.

About noon he had an epileptic convulsion, which lasted two minutes. The spasmodic action of the muscles in the paralyzed leg gave the first indication of the paroxysm. This spasmodic action soon became general and the whole body violently convulsed. Towards the close of the paroxysm his face became very livid. Pulse, half an hour after, full and soft. Patient in other respects about the same as before the paroxysm.

12th. Pulse 122, and soft; face flushed; conjunctivas a little congested, pupils natural; tongue coated with a white fur; skin moist; twitching of the muscles of the right side of the face; slight delirium. ℞ Ant. Tart. gr. j., spts. Minder. ℥iv. A tablespoonful every two hours.

4 o'clock, P. M. Pulse 130, soft and compressible; seemed to be in a state of stupor; could be aroused, but would not answer questions when spoken to; face flushed; skin moist; erythema on the superior part of the chest and anterior part of the neck. During the day has had two slight epileptic paroxysms. Bowels moved several times during the morning.

Treatment continued.

Visited him again at 8 o'clock, P. M. Condition much the same as at 4 P. M. Has had spasmodic contractions of the muscles in various parts of the body, particularly of the muscles supplied by the right facial nerve. He was bled to the extent of ℥xxx, which considerably reduced his pulse.

13th. Pulse 128, very weak and irritable; face flushed; pupils a little dilated and sluggish in their movements; skin soft and moist; would not protrude his tongue, or pay the least attention to what was said to him; insensibility of the *right* leg, but not an entire loss of motion; erythema subsiding; had two healthy evacuations during the night; slight tumefaction of the wound; all except the angle has united by the first intention. The dressings were removed, and some coagulated blood escaped, together with a little serum. The angles of the wound were opened, and a flaxseed poultice applied; the cold applications continued to the surrounding parts. ℞ Prot. Chlor. Hyd. ℥ss. M. et div. in char. vj. One of these powders to be given every four hours. The spts. Minder. and ant. tart. to be continued.

7 o'clock, P. M. Condition much better; pulse 118, full, soft, and regular; patient a great deal more rational; face not so much flushed; skin moist; tongue coated in the centre with a brownish fur; pupils natural; bowels soluble, and evacuations healthy; sensation returning in right leg; would give monosyllabic answers when spoken to.

Treatment continued.

14th. Condition much improved since yesterday; pulse 94. His improved condition continued throughout the day.

Same treatment continued, with the exception of the calomel, which was omitted.

15th. Pulse 86, full, and firm; tongue coated with a

white fur; skin soft and moist; pupils natural; expression of countenance better, but staring; more rational, but cannot converse; had two tolerable healthy evacuations during the night; twitching of the muscles of the *right* side of the face. ℞ Prot. Chlor. Hyd. gr. xij., Pul. Ipec. gr. iij., M. et div. in char. vj. One every four hours. Poultice to the wound and cold to the head continued.

16th. Condition much worse; pulse 100, full, and firm; skin dry; palpebræ nearly closed; *left* pupil dilated to nearly double the size of the right; pays no attention to surrounding objects, and could only be aroused with great difficulty. Was bled to the amount of ℥xxiv, and yesterday's treatment continued.

17th. Much worse; pulse very frequent, small and irritable; pupils dilated and insensible; skin clammy and inelastic; comatose.

He continued to grow worse, and died at two o'clock, P. M.

No autopsy could be obtained.

Case 2d. The following case I have extracted from my note book. It occurred in the New York Hospital during the term I was resident surgeon in that institution:

Necrosis of Rib, Pleuropneumonia, Pericarditis.—John McLaren, æt. 42, seaman, born in Ireland, admitted February 14th, 1840, complaining of a disease on the left side of his chest, attended with considerable pain, which had existed several months, being of late sufficiently severe to prevent him from following his usual occupation. On examination a flattened tumor, scarcely elevated enough to be perceptible at the first glance, was detected on the left and lower portion of the chest, just beyond the angle of the ribs. Pressure over this indicated a small elastic tumor, about an inch in diameter, flattened and attached apparently to the sixth rib. One or two smaller tumors, of a similar character, could be felt posterior to this, at-

tached to the same rib. The bulging of the integuments, caused by these deep swellings, produced the flattened tumor on the surface, which was about three inches square. Pressure over this part gave the patient no uneasiness, and he was free from all evidence of disease in the thoracic viscera. He could assign no specific cause for the disorder, but thought he might have had a fall against that portion of his side.

About the 1st of March, a puncture was made with a lancet, through the swelling, down upon the principal of the elastic tumors above noticed. Some hemorrhage followed the incision, and a probe afterwards introduced reached the periosteum of the rib, which appeared to be hard and cartilaginous. No exposed bone could be detected, but a small quantity of thick purulent matter was pressed through the lips of the wound.

A day or two afterwards, the patient feeling himself able to work, went out of the hospital, but suppuration becoming abundant in the wound, he returned in eight or ten days.

On examination the matter was found to proceed from a deep and tortuous sinus, running in the direction of the rib, but external to it. No diseased bone has been as yet detected. The sinus was freely opened and dressed from the bottom, and was afterwards occasionally injected with a solution of sulphate of copper. Under this treatment the suppuration diminished, and the external incision contracted to a small fistulous opening.

April 22d. On examination with a probe, several pieces of detached bone were detected at the bottom of the fistula; the integuments were again divided, and several small pieces of loose bone were removed by the finger from the bottom of the wound. For two or three days subsequently small pieces of bone were detected, and removed at each dressing. The wound afterwards assumed a healthy character, and the patient's general health was to all appearances sound.

May 7th. The patient was, in the middle of the night, seized with a rigor, and on the following morning he was found laboring under considerable excitement; pulse frequent, quick, and full; skin hot and dry; tongue coated with a white fur, and a severe pain in the head.

℞ Spts. Minder. ℥ viij.
Ant. Tart. gr. ij.

A tablespoonful to be given every two hours.

In the afternoon, his symptoms being more urgent, he was bled to the extent of ℥ xij, and the spts. Minder. and antimony continued.

9th. This morning the fever had abated somewhat, but as he complained of pain in his left side, he was freely cupped over that region. In the afternoon he appeared to be rather more comfortable.

10th. This morning he complained of severe pain in different parts of his body, but more particularly in his left side, and over the scorbiculus cordis; the whole of the left side in a state of erysipelatous inflammation.—Ung. hyd. was applied to the inflamed surface, and the spts. Minder. and ant. tart. continued.

11th. This morning he appeared to be rather better, and continued so throughout the day.

In the afternoon, the spts. Minder. was discontinued, and he was directed to have a tablespoonful of the following mixture every two hours:

℞ Sulph. Magnes. ℥j.
Ant. Tart. gr. ij.
Aqua, ℥viij.
Misce.

12th. This morning he appeared to be worse, having passed a very restless night. The salts had not yet operated. His pulse was frequent and small, and the pain in the side very severe. Ordered cups to be applied sup: reg: dolor: and a purgative to be administered.

In the afternoon an enema was administered, which soon passed away, mixed with a small quantity of feces.

13th. Appears to be better; pulse rather fuller and less frequent; skin moist; very little pain, and erysipelas subsiding.

Solution of salts and antimony discontinued.

In the afternoon prot. chlor. hydrarg. gr. xx was given him.

14th. Passed another restless night, and complained this morning of a renewal of the pain.

In the afternoon another injection was given him, as the calomel had not operated, but this soon passed away, unmixed with any feculant matter. In the afternoon, ¼ gr. sulph. morph. was given him.

15th. Much about the same as yesterday. Spts. Minder. directed again.

In the afternoon it was first discovered that his pulse intermitted, and it evidently appeared that he was sinking. His voice was sepulchral; respiration short and labored: surface purplish, cool, moist, with clammy perspiration.

In the evening, sinapisms were applied to the calves of his legs, and brandy given him throughout the night.

16th. Much better than yesterday; skin hot and dry; pulse full, but intermitting.

In the afternoon, he appeared to be worse; surface again cool and purplish, with clammy sweat; pulse feeble and irregular. Had a simple injection, with tinct. aloes comp. ℥vj. added to it, given him, which passed away pure in a much less time than it took to give it. Brandy was again given him throughout the night.

17th. The erysipelas had entirely disappeared, but the posterior part of the body was very much congested.—Other symptoms same as before. Brandy discontinued. Had a blister applied to his left side, and tinct. digital. gtt. v given him every two hours.

He gradually got weaker throughout the day, and died at five o'clock, P. M.

Autopsy, nineteen hours after death.—On opening the chest the pericardium was found distended with serum, and the inner lining coated in all parts with a layer of plastic lymph, about a quarter of an inch in thickness, extending as well over the heart as within the pericardium proper; the heart itself in other respects was natural. The left lung had contracted a firm adhesion to the point of the chest opposite the diseased rib; the rest of the surface of the pleura was free, and coated like the pericardium, with a recent deposit of plastic lymph, that adhered but slightly to the part. The cavity of the pleura contained about half a pint of serum. The whole of the lower lobe of the left lung had been inflamed, and was in a state of red hepatization; the upper lobe was to all appearances healthy. The other viscera of the chest and abdomen presented no evidence of disease. On examining the rib it was found perforated by a hole large enough to contain the end of the finger, and to be deficient at its upper edge; this perforation, however, was prevented from communicating with the chest by the thickened periosteum, and by the internal adhesion already noticed. Another perforation was discovered to the sternal side of this, and extending about half way through the rib. The rib seems to have been fractured at these points a long time previous, and the callous appears to have been generated only at the lower portion, leaving the deficiencies that have given rise to these notches, which are now smooth and rounded off at the edges.

Note.—This patient had no cough during the whole of his disease, and his respiration was unembarrassed until within two days of his death. The disturbance in the circulation, the irregularity in the pulse, and a sudden sinking, with severe pain in the region of the heart, detected at that period, gave the first suspicions of pericarditis, which was detected after death.

REVIEWS.

Art. V.—*Manual of Physiology.* By W. Senhouse Kirkes, M. D. Assisted by James Paget, Lecturer on General Anatomy and Physiology, at St. Bartholomew's Hospital, with 118 illustrations on wood. Philadelphia: Lea & Blanchard, pp. 552, 12mo. 1849.

That branch of medical science in which progress for some years past has been most rapid, is unquestionably Physiology. Whatever may be said of the advances of practical medicine, the most cynical are obliged to admit that physiology has been enriched by great discoveries. The student of former years, indeed, who returns to it now, finds it a new science. It is no longer what it was when Blumenbach and Rickerand were the only authorities accessible to American students in their mother tongue. It has not only been extended by novel and important accessions, but has assumed a different aspect.—It has become an exact science. Based upon anatomy, and growing out of it, it has ceased to be visionary, and has grown eminently practical. Chemistry and the microscope have explained functions concerning which, but a little while ago, we had nothing but ingenious surmisings. Many absurd theories have been abandoned, and, what is of far greater account, better processes have been adopted. It is not by a resort to some imaginary vital

force, but to the scalpel, the chemical reagent, or the microscope, that the physiologist seeks to solve the difficult problems of his science. Speculation is given up as of no value. We do not find the word "sympathy," which held so conspicuous a place in some exploded systems, once mentioned in this latest treatise on physiology.—Mesmerism, if mentioned at all, is alluded to incidentally —indications, these, to our minds, of real advancement in physiological science.

Human physiology is defined by our authors to be "the science which treats of the conditions, phenomena, and laws of the life of the human body in the state of health." These phenomena are such as are exhibited by vegetables, in common with animals, and such as are peculiar to the members of the animal kingdom. Of the first class are the processes of digestion, absorption, secretion, circulation, respiration, and some others, the processes also of growth and nutrition, and the generative process.—These are the phenomena of organic or vegetative life.—Those which are peculiar to animal life are the functions of sensation and voluntary motion But it must be borne in mind that this division of the functions of life is artificial, and does not indicate any absolute dissociation, the organic and the animal life being so knit together and so mutually dependent, that neither can be long maintained without the other. If the processes of digestion, respiration, and nutrition are essential to the maintenance of the organs of animal life, sensation and voluntary motion are not less so to the prehension of food, and other functions of organic life, by which the animal is kept alive and the species perpetuated.

Organization is peculiar to the objects of the living world. All bodies in which the phenomena of life have been observed are formed of diverse mutually adapted parts, which are styled organs; and it is nowhere else but in such bodies that organization is detected. We find it

in the fossil, but not in the quartz pebble. The fossil, indeed, may be silicified and crystalized, but in the silex and amid the crystals the impress of its organs is still palpably manifest, its eyes, its stomach, its weapons of defence hardened into flint.

The first chapter of this work treats of the chemical composition of the human body, into which about one-third of the elements with which chemistry has made us acquainted are now known to enter. Four of the constituents, to wit: oxygen, hydrogen, nitrogen, and carbon, because of their uniform existence and great abundance in nearly all animal substances, are named *essential elements;* the rest, being less constant, and occurring often in very small quantity, are styled *incidental elements.* But we are not to infer that these are less necessary than the first class to the right composition of the substances in which they exist. Sulphur and phosphorus are as essential to the constitution of the tissues, and iron is as essential to the constitution of the blood, as is either of the four abounding elements. The terms are to be taken in only a general sense. The existence of manganese, alumina, and copper in the human body has been questioned —but the experiments of Orfila, Millon, Hiller and others leave little room for doubting the fact that they often occur. Alumina is found in the ashes of hair, bones, and enamel, and manganese and copper exist especially in the biliary secretion. In the blood as well as the liver of several of the mollusca and fish, Harless and V. Bibra found copper constantly present, seeming to replace, to some extent, the iron contained in the blood of other species, and to form a normal, necessary constituent. Still, in the view of our authors, it is most likely that, in the human body, both copper, manganese and alumina are "*accidental elements,* which, being taken in minute quantities with the food, and not excreted at once with the feces, are absorbed and deposited in some tissue or organ.

of which, however, they form no necessary part." Arsenic and lead, in the same manner, being absorbed, are occasionally deposited in the liver and other parts. In favor of this view, we have the statement of Heller, that although copper is frequently present in the bile of adults yet it is never found in that of infants.

It would be curious to compare the statements contained in this chapter with the teachings of a school of physiologists once somewhat in vogue. Few contrasts could be found more striking. By these physiologists it was held, that neither the essential nor the accidental elements extend, as such, into the composition of the human body —that neither carbon, oxygen, nor hydrogen, neither iron, phosphorus, nor sulphur, could be found existing "formally" in animal matter. They held that the chyle was a "homogenous fluid," unvarying in its constitution, and that it alone entered the circulation. Neither lime, nor soda, nor any other foreign substance, they contended, could pass the lacteals, but that these matters were formed by the "vital principle" out of the elements of the food. Sulphur and phosphorus, if taken up by the lacteals, were absorbed as "chyle," and only reappeared as sulphur and phosphorus when they were thrown off as excretions and placed beyond the pale of vitality. When a deficiency of phosphate of lime was at any time manifest in the system, the deficiency was ascribed, not to any defect in the food, but to a lack of energy in the vital principle. Digestion was impaired, and the phosphorus, oxygen, and lime could not be created. Out of the "homogenous chyle" the phosphoric acid and calcium of the bones, the chlorine, and sodium, and potassium of the blood, the iron of the hematozine, the magnesia, silica, fluorine, and manganese, all were held to be created by the vital principle. The same chyle formed, in one organ, bile, and in another, urea; in one it was deposited as fat, and in another it repaired the wasted muscular or

nervous tissue. The "homogenous chyle" gave birth to the "homogenous blood," and out of this simple fluid sprang compounds of endless variety.

One reads these lucubrations now with a smile. No one thinks of opposing them with serious argument.—The system, if system it is worthy to be called, "like the baseless fabric of a vision," has faded away, and soon no wreck of it will be found in our medical literature.

The second chapter gives an account of the structural composition of the human body. Fluids and solids compose it. The fluids are, 1st, *formative*, from which are derived the materials for the construction of the frame: and, 2d, *secreted* fluids.

Among the solids, some are structureless, as the albumen of eggs, the substance called *cytoblastema*, or *formative* substance, the simple membrane which forms the wall of most primary cells, the membrane enveloping the vitreous humor of the eye, and the intercellular substance of the most perfect cartilage. In those which present determinate structure, certain primary forms may be distinguished, which make up the tissues and organs of the body. These are, 1st, *granules*, or *molecules*, the simplest and minutest of the primary forms; 2d, *nuclei*, or *cytoblasts*, which stand next in simplicity of structure: 3d, *cells*, larger than nuclei, but composed, like them, of membranous cell-walls, with, usually, liquid contents.—By the further development of these, higher, or secondary forms are produced; as, 1st, *filaments*, or fibrils; 2d, *fibres;* 3d, *tubules*. These form the various tissues of the body, which are briefly described in the subsequent chapters of this work.

The third chapter considers the vital properties of the organs and tissues of the human body; for while chemical and mechanical forces are sufficient to account for many of the phenomena of living beings, there are others which cannot be explained upon this principle, and which

imply the existence of another force, the vital. A remarkable manifestation of this force is seen in that property of vegetables and animals, by which they form themselves out of materials unlike them; as when, for example, a plant grows by assimilating the elements of ammonia, carbonic acid, and water; or when an animal feeds upon vegetables and forms its blood and various organs out of the materials of its food. This is termed *formative*, or *plastic force*, which exhibits itself under the three forms of *development*, *growth*, and *assimilation*. The most general, and one of the simplest, modes in which this force is manifested is in the formation and further development of nucleated cells.

The nucleated cell is the form towards which organizing matter most commonly tends, in which it often rests, and through which it usually proceeds in its further developments. In nucleated cells, also, are the best examples of inherent formative power, which, not being consumed in the formation of the cells, remains operative in them, changing them and their contents, and influencing the surrounding or intercellular substance in which they are deposited. Thus, whether it be for the preparation of materials from food which may serve to the maintenance of the body, or for the construction of the several tissues, or for the formation or temporary storing up of the materials that are to be removed from the body as refuse, in all these, and in nearly all instances of them, the end is attained by or with the help of the formation, continued energy, or dissolution of nucleated cells.

It is no single, but several complex forces which accomplish the formation of so simple a part as a cell.—Mechanical force determines its position, shape and relations; chemical force decides the composition of its walls and contents; but, co-operating with these, and directing them, is the wonderful vital force, "by virtue of which the cell acquires all the properties that characterize the

species or organ to which it is attached, and becomes capable of taking part in vital processes—even in such processes as those in which itself originated."

Some physiologists have represented these forces as in a state of antagonism. Chemistry, they teach, was at war with vitality, and only gains any influence over the body when life is at an end. But such is not the opinion of our authors, who teach that "the vital formative force includes and directs the physical forces that issue from the mere matter of the organic body." How much in each act of the living body is physical, and how much depends on the peculiar vital force, is more than we can determine; but Dr. Kirkes truly remarks that "the advancing knowledge of the physical sciences proves every year that effects which used to be ascribed to vital forces, are due to the operation of the forces of chemistry and mechanics."

Contractility may be reckoned a second vital property, and a third is the power of conducting or transmitting stimuli or impressions; and these three are the peculiar properties of living animal matter. Self-formation, which every part possesses, constitutes, in its various modes of action, the principal functions of the organic life of the animal. In some of the tissues resides the power of contracting; and the nervous tissue is capable of peculiarly conducting the impressions made on it by stimuli. The latter two are exercised especially in the animal life, and it is by means of these that the mind becomes cognizant of the properties of the external world.

The processes of digestion, absorption, respiration, secretion, and excretion have their end in the formation, movement and purification of the blood. The physiology of the blood, therefore, properly precedes the consideration of these subservient processes. It is discussed at considerable length in the 4th chapter.

The blood is described as "a colorless fluid, containing

minute particles, the greater part of which are red, and give the blood its color." The fluid is the *liquor sanguinis;* the particles are the *blood-and-lymph-corpuscles,* or *cells.*

The specific gravity of the blood is 1055, water being 1000, and the extremes consistent with health being, according to Nasse, 1050 and 1059. It has a slight alkaline reaction; a temperature of 100 degrees Fahrenheit; "and emits an odor similar to that which issues from the skin or breath of the animal from which it flows." The alkaline reaction is a constant character of the blood in all animals and under all circumstances, the menstrual blood forming no exception; for the acid reaction which this sometimes presents, has been ascertained to depend upon an acid mucus from the uterus and vagina. Pure menstrual blood, such as may be procured by means of a speculum, is always alkaline, and resembles ordinary blood. The odor of the blood depends upon the presence of a volatile fatty acid, and when sulphuric acid is added it evolves the odor, by combining with the base with which, naturally, this fat is neutralized. This effect is produced by the acid long after the blood has lost the odor which it emits when fresh drawn; and Barruel has directed attention to the curious fact that the likeness of the odor to that of the body of the species of domestic animal from which any specimen of blood has been taken, makes it easy to determine the species. The strong odor of the pig or cat, and the peculiar milky smell of the cow are said to be especially easy to be discerned in their blood.

Of the several constituents of the blood, the fibrine is the only spontaneously coagulable material. Why it coagulates is not certainly known, but the most reasonable hypothesis is, "that its coagulation is a process of organization—the first step towards a more highly organized tissue. The evidence for this hypothesis is given at some

length, and is entirely satisfactory, justifying the expression of Mr. Hunter, that "coagulation is an operation of life."

Rest is favorable to the coagulation of the blood, and cold retards it; but of all external conditions that which favors coagulation most, is the free access of air. This has been accounted for by the fact that carbonic acid is extracted more readily under such circumstances; but the explanation is not free from objections, for Dr. John Davy has shown that this gas is not evolved from coagulating blood. Coagulation is not always prevented by the modes of death noticed by Mr. Hunter, although in many instances of death from lightning it has been found fluid in the body. The result does not appear to be uniform.

The blood corpuscles are red and white, the former in the human subject being about fifty times more numerous than the latter, while the individual is in health; in certain diseases the proportion of white corpuscles is as high as one to ten. As a whole, the composition of the blood is so nearly identical with that of the flesh of an animal that the same formula will answer for both, which, as given by Playfair and Boeckmann, is C_{45}, H_{39}, O_6, N_{15}.— Its several constituents are subject to great variations.— The water may vary every hour, according to the food and drink, the exercise, the state of the atmosphere, and whatever other events affect the ingestion or excretion of fluids. Its healthy range is from 700 to 790 in the thousand; its average proportion being 784. The albumen may vary, consistently with health, from 60 to 70 parts in the thousand of blood; and the fibrine may vary between 2 and 3 parts. In disease the variation is much greater.

Hemato-globulin is the name given to the substance in the red blood-corpuscles, of which its hematine is remarkable for the large proportion of iron contained in it. The metal, in the opinion of Scherer and Mulder, is com-

bined as an element with the four essential elements of the hematine, as sulphur is combined with them in albumen and fibrine. This view is supported by the fact that when chlorine, which would not decompose an oxide of iron, is passed through a solution of hematine, chloride of iron is formed; and that all the iron may be removed by sulphuric acid, without abstracting from it any of its oxygen, which would not be possible if the iron were more intimately united with the oxygen than with the other elements of the hematine. It is further sustained by this, that hematine loses none of its iron by being subjected for several days to the action of dilute hydrochloric or sulphuric acid, while these acids readily dissolve an oxide and decompose a carbonate of iron. But the color of the blood, it is now rendered certain, depends less upon the iron than on the other constituents of the hematine; for Mulder and Scherer have shown that hematine retains its characteristic hue after all its iron has been extracted. The change of color induced by respiration would seem to depend upon physical rather than upon chemical causes; to be due, in a word, to changes in the form of the blood-corpuscles, and their consequently different modes of reflecting and transmitting light. Black blood becomes scarlet by washing it with salt; a scarlet clot is made black by washing it with distilled water; but these changes are not produced by salt when added to hematine, and are not connected with any chemical change in that substance or in the corpuscles. They are connected with alterations in the shape of the red corpuscles, which are rendered deeply bi-concave, by dense saline solutions, and thickly bi-convex or spherical, by distilled water, changes corresponding with which are produced by the contact of oxygen and of carbonic acid with the corpuscles—the former contracting them, and making their cell-membranes thick and granular; the latter dilating them, and finally dissolving their cell-walls. "Here-

in, then," as our authors conclude, "is a sufficient explanation of the changes that the corpuscles undergo, without supposing any immediate chemical alteration in the hematine; an alteration which should take place as well in a solution of hematine as in the corpuscles."

The inorganic constituents of the blood, those which form the ashes after its complete burning, are small in proportion to its animal constituents. Of these, the phosphate and carbonate of soda, and the phosphate of lime possess peculiar interest. To the salts of soda the blood probably owes its alkaline reaction. Liebig and Enderlin ascribe it entirely to the tribasic phosphate of soda, and contend that no carbonate is present, for the reason that carbonic acid is not evolved when hydrochloric acid is added to a concentrated solution of the alkaline salts of the blood. But this is explained by the fact, as pointed out by Marchand, Lehmann, and others, that the carbonic acid is absorbed by the solution of the phosphate of soda, and cannot appear as gas escaping. The latest researches of Lehmann seem to have proved the existence of both the carbonate and tribasic phosphate in the blood, and that they are jointly the source of its alkaline character. Liebig has pointed out the remarkable capacity of solutions of phosphate of soda for absorbing carbonic acid, and the readiness with which they give it off again when agitated with air, or when the atmospheric pressure is diminished. This salt is also probably the agent by which the phosphate of lime in the blood is held in solution in a form in which it is not soluble in water, or in a solution of albumen. And thus we see that a most important office is performed by the inorganic elements of the blood, although their proportion is so small; and that without them its constitution would be incomplete.

When once the blood is formed, its growth and maintenance are effected by the constant repetition of the development of new portions. New materials are supplied

to it by the lymph and chyle, and, by development, become like it, as its constituents are consumed in the repairs and secretions of the economy. By the stomach, the liver, and the other vascular glands, materials are prepared fit for the formation of blood; and, by the excretory organs, the waste substance of the tissues—urea, carbonic acid, &c.—are carried out of the system, and its purity preserved. But not only so; each part, by abstracting the materials it requires for its maintenance, is in the relation, as Treviranus remarked, of an excretory organ to all the rest. The muscles take the materials for their nutrition; the bones remove their necessary aliment; and thus neither fibrine, phosphate of lime, nor any other element is allowed to accumulate in excess.

Some impressive generalizations conclude this chapter, with which we close for the present our notice of this work, to resume it, however, in our next number. Thus, it appears that the development of the blood keeps pace with and is in proportion to the development of the race of beings. In the Invertebrata, the blood-corpuscles are on a par with the lymph-corpuscles of the oviparous Vertebrata. In fish, coincidently with the development of a brain and spinal cord, we find a larger quantity of blood. The fuller development of brain in reptiles is associated with a general further increase in the quantity and velocity of blood. As we rise in the scale of being we find a still further improvement in this fluid. In birds its velocity is greater than in reptiles; the quantity of its fibrine is also augmented, its corpuscles are multiplied, and their size is diminished. And finally, in the Mammalia, the corpuscles appear developed in the highest form, corresponding with the superior development of the brain.

It is through the blood that the characters of the organic life are adjusted to the central nervous system. To its formation all the organs of that life minister, and it may therefore be regarded as the highest member of the

parts concerned in the organic life, in the same sense as we regard the brain as the highest of the organs of animal life. "And this eminence of the blood is shown, first, by its chemical composition, which, as we have seen, is more highly organic than that of the greater part of the tissues; second, by the time at which it first appears in the embryo, in which, as the brain and spinal cord precede, in their rudiments, the other and subordinate organs of animal life, so the blood appears before any of the persistent organs of the organic life; third, by the complexity and number of the processes through which it is elaborated."

ART. V.—*Human Anatomy.* By JONES QUAIN, M. D. Edited by RICHARD QUAIN, F. R. S., and WILLIAM SHARPEY, M. D., F. R. S., Professors of Anatomy and Physiology in University College, London. First American from the fifth London edition. Edited by JOSEPH LEIDY, M. D. 2 vol. 8vo. Philadelphia: Lea & Blanchard. 1849.

A press of matter has prevented an earlier notice of this long expected and truly valuable edition of *Quain's Anatomy*—a work of too high standing in the estimation of the profession, to be profited by our poor praise.

The original treatise has been materially altered.

"The whole of the Section on General Anatomy is rewritten.

"The Descriptive Anatomy of the Osseous System has undergone various alterations, and some portions, including those which treat of the Formation and Growth of the several Bones of the Skeleton, belong exclusively to this edition. The description of the Articulations has been subjected to a complete revisal.

"Under the head of the Muscular System, many addi-

tions have been made; among which may be especially mentioned the account of the variations of form and attachment observed in individual muscles. Several parts have been re-written; but the paragraphs headed 'Dissection' and 'Action of Muscles' are printed from the preceding edition with scarcely any alteration.

"The principal changes to which the section on the Vascular System has been subjected, occur in the description of the Arteries. The history of each of the larger arteries has been recast, and a statement of the varied forms which these vessels present in different cases has been abridged from a special treatise published by one of the Editors.

"In the remainder of the work, including the description of the Brain, Nerves, and Organs of the Senses, the Heart, with the Digestive, Respiratory, Urinary, and Generative Organs, little or nothing remains of the former editions.

"The Surgical Anatomy, which has been introduced partly in connexion with the history of the principal arteries and partly at the end of the work, has likewise been written for the present edition."

Dr. Sharpey has contributed those portions of the work embraced under the heads of *General Anatomy;* and *Descriptive Anatomy* of the Brain, Heart, Organs of Respiration, Voice and Digestion, and the Genito-Urinary Apparatus: while to Dr. Quain has been assigned "the remaining portion of the *Descriptive Anatomy*, comprehending the Bones, Muscles, Articulations, Fasciæ, Vessels, Nerves and Organs of the Senses, as well as the *Surgical Anatomy* of the different regions."

A part of each of the Editors' labors was performed by their Junior Colleagues in the Anatomical Department of the University College, viz: Mr. Ellis, Mr. Potter and Mr. Marshall. So that, in fact, it is the united production of *five* accomplished Anatomists. There is not, how-

ever, to be found in its pages any evidences of such a multiplicity of editors; on the contrary, the unity and completeness of every department, is almost a matter of marvel.

We cannot too highly commend the great research displayed by Dr. Sharpey, in his contributions to the subject of *General Anatomy*—particularly that portion of it relating to the structure and development of Bone, and the ultimate structure of Muscular Fibre.

We cannot refrain from giving a few extracts on these and other topics.

Formation and growth of bone.—The foundation of the skeleton is laid at a very early period, for among the parts that appear soonest in the embryo, we distinguish the rudiments of the vertebræ and base of the skull, which afterwards form the great median column to which the other parts of the bony fabric are appended. But it is by their outward form and situation only, that the parts representing the future bones are then to be recognized; for at that early period they do not differ materially in substance from the other structures of the embryo, being like these, made up of granular corpuscles or elementary cells united together by a soft amorphous matter or blastema. Very soon, however, they become cartilaginous, and ossification in due time beginning in the cartilage and continuing to spread from one or from several points, the bone is at length completed.

But while it is true with respect to the bones generally that their ossification commences in cartilage, it is not so in every instance. The tabular bones, forming the roof of the skull, may be adduced as a decided example to the contrary; in these the ossification goes on in a membranous tissue quite different in its nature from cartilage; and even in the long bones, in which ossification undoubtedly commences, and to a certain extent proceeds in cartilage, it will be afterwards shown that there is much less of the increment of the bone really owing to that mode of ossification than is generally believed. It is necessary, therefore, to distinguish two species or modes of ossification,

which for the sake of brevity may be called the *intramembranous* and the *intracartilaginous.*

Ossification in membrane.—The tabular bones of the cranium, as already stated, afford an example of this mode of ossification. The base of the skull in the embryo is cartilaginous; but in the roof, that is to say, the part comprehending the parietal, the upper and greater part of the frontal, and a certain portion of the occipital bones, we find (except where there happen to be commencing muscular fibres) only the integuments, the dura mater, and an intermediate membranous layer, which differs from cartilage in its intimate structure as well as in its more obvious characters, and in which the ossification proceeds.

The commencing ossification of the parietal bone, which may be selected as an example, appears to the naked eye in the form of a net work, the little bars or spicula of bone running in various directions, and meeting each other at short distances. By and by the ossified part, becoming extended, gets thicker and closer in texture, especially towards the centre, and the larger bony spicula which now appear, run out in radiating lines to the circumference; the ossification continuing thus to spread and consolidate until the parietal meets the neighboring bones, with which it is at length united by suture.

The adjoining figure (23,) represents the parietal bone of an embryo sheep, about two inches and a half long, and shows the character of the ossification as it appears when the object is magnified about twelve diameter. The bone is formed in membrane as in the human fetus, but a thin plate of cartilage rises up on its inside from the base of the skull. The ossification, however, is decidedly unconnected with the cartilage, and goes on in a membrane lying outside of it. The cartilaginous plate is not represented in the figure, but a dotted line, near the top, marks the height to which it reached, and from this it will be seen that the ossification extended beyond the cartilage. In the region of the frontal bone the cartilage does not even rise so high. In both cases its limit is well defined, and under the microscope it presents a decided contrast to the adjacent membrane.

When further examined with a higher magnifying power, the tissue or membrane in which the ossification is

proceeding, appears to be made up of fibres and granular corpuscles, with a soft, amorphous or faintly granular uniting matter. The fibres have the characters of the white fibres, or rather fasciculi, of the cellular and the fibrous tissue, and are similarly affected by acetic acid. The corpuscles are for the most part true cells, with an envelope and granular contents; some about the size of blood-particles, but many of them two or three times larger. In certain parts the fibres, but in most the corpuscles, predominate; and, on the whole, the structure might be said to be not unlike that of a fibrous membrane in an early stage of development. The bone, seen by transmitted light, is dark and opaque, and near the growing edge it is decidedly granular.

On now observing more closely the bony processes or spicula at the circumference, where they shoot into the membrane (as in fig. 24), it will be seen, as you trace them into the soft tissue, that they gradually lose their opaque and granular character, indicative of earthy impregnation, and are prolonged a little way into the membrane, in the form of bundles of transparent fibres, having all the characters of those of fibrous tissue. These fibres are in some parts closely gathered into thick bundles, but more generally the fasciculi are smaller, and irregularly interlaced or reticulated, with corpuscles lying between them; and we may often observe that where the earthy deposit is advancing to invade the fibres, the recently and as yet imperfectly calcified bone with which they are continuous, presents a similar open and coarsely reticular structure; though the older, harder, and more opaque part is comparatively solid and compact. The appearance referred to is especially well seen at those places where a cross bridge of bone is being formed between two long spicula; we may there distinguish the clear soft fibres which have already stretched across the interval, and the dark granular opacity indicating the earthy deposit may be perceived advancing into them and shading off gradually into their pellucid substance without a precise limit.

It thus appears that in the intramembranous ossification the growing bone shoots into the soft tissue, in the form of transparent fibres, resembling those of fibrous texture, more or less intermixed with granular corpus-

cles, and that these fibres become charged with earthy salts. As to the cells or corpuscles, they certainly seem to be in some way involved in the ossification along with the fibres, but I am not able to say what precise share they have in the process. It has been supposed that they eventually form the lacunæ of the bone; but we shall enter upon this question afterwards.

As the bone extends in circumference it also increases in thickness, the vacuities between the bony spicula become narrowed or disappear, and at a more advanced period the tabular bones of the cranium are tolerably compact towards the centre, although their edges are still formed of slender radiating processes. At this time also numerous furrows are grooved on the surface of the bone in a similar radiating manner, and towards the centre these are continued into canals in the older and denser part, which run in the same direction. The canals, as well as the grooves, which become converted into canals, contain blood-vessels supported by processes of the investing membrane, which deposit concentric layers of bone within; and when thus surrounded with concentric laminæ, these tubular cavities are in fact the Haversian canals.

In regard to the ultimate structure of muscular fibre, Dr. Sharpey's observations are identical with those of Dr. Carpenter, published about the same time—both going to prove that the ultimate fibril consists of a series or string of cells, united end to end.

When a fibril thus completely insulated is highly magnified, it is seen to consist of a single row of minute particles, connected together like a string of beads. These particles (named "sarcous elements" by Bowman), when viewed with a magnifying power of 400 or 600, appear like little dark quadrangular and generally rectangular bodies, with bright intervals between them, as if they were connected together by some pellucid substance; but on closer examination, provided the defining power of the instrument is good, a very faint dark line or shadow will be discovered passing across the fibril in the middle of each of the bright spaces, and sometimes also a bright

border may be perceived on either side of the fibril, so that each of the rectangular dark bodies appears then to be surrounded with a bright area having a similar quadrangular outline, and it may therefore be inferred that the pellucid substance encloses it on all sides. In short, it would seem that the elementary particles of which the fibril is made up, are little masses of pellucid substance, presenting a rectangular outline, and appearing dark in the centre. Their appearance, indeed, suggests the notion of minute vesicular bodies or cells, cohering in a linear series, the faint transverse marks between being the lines of junction. But although this idea very naturally presents itself, we must not assume that the reality of it is established. With a still higher magnifying power, the dark central part appears constricted in the middle, or looks as if it consisted of two portions joined together. When the focus is altered, the internal dark part becomes light; it is therefore evidently transparent, and its dark aspect is probably owing to its refracting the light differently from the surrounding substance. Minute pellucid objects, indeed, exhibit, when highly magnified, a dark centre surrounded by a bright halo, if viewed a little within the true focal distance; but the bright circumference of the muscular particles seems to be something more than can be accounted for in this way.

When the fibrillæ lie undisturbed in the fibre, the elementary particles of collateral fibrils are situated in the same transverse plane, and it is to this lateral coaptation of the particles that the transverse striping of the fibre is due. (See *b*, fig. 161.) Accordingly, the cross lines are not confined to the surface of the fibre, but may be seen throughout its entire thickness on successively deepening the focus of the microscope. The fibres moreover often show a tendency to cleave across in the direction of these lines, and even to break up into transverse plates or disks (fig. 162), which are formed by the lateral cohesion of the particles of adjacent fibrils. To make up such a disk, therefore, every fibril contributes a particle, which separates from those of its own fibril, but coheres with its neighbors on either side, and this with perfect regularity. Indeed, Mr. Bowman conceives that the subdivision of a fibre into fibrillæ is merely a phenomenon of the same kind, only of more common occurrence, the cleavage in

the latter case taking place longitudinally in place of transversely: accordingly, he considers that the fibrillæ have no existance as such in the fibre, any more than the disks; but that both the one and the other owe their origin to the regular arrangement of the particles of the fibre longitudinally and transversely, whereby, on the application of violence, it cleaves in the one or in the other direction into regular segments.

It will be seen from the following extract, that the true arrangement of the *nerve-fibres* at their peripheral extremities, according to Dr. Sharpey, is not by any means what it is commonly supposed to be.

The results of modern microscopic discovery seemed for a time to lead to the conclusion that the fibres of nerves do not, strictly speaking, end in the tissues in which they are distributed, but merely dip into those tissues, as it were, and, after forming slings or loops of greater or less width, return sooner or later to the nervous trunks. The further progress of inquiry has, however, failed to establish the generality of this conclusion, and has even gone far to disprove the existence of the alleged mode of termination in various cases in which it had been previously held to take place; and, indeed, it must be admitted that the arrangement of the nervous fibres at their peripheral extremities is still but imperfectly understood.

In no case was the termination of nerves by loops more generally acknowledged than in voluntary muscle; but certain observations, very recently made known by Wagner, are calculated to throw considerable doubt on the opinion hitherto received, especially when viewed in connexion with the results of collateral inquiries respecting the nerves of various other textures. Wagner states that, in the muscles of the frog, the tubular nerve-fibres may be observed to be at last divided into fine branches, which appear (although he is not quite certain on this point) to perforate the sarcolemma of the muscular fibres, and to divide into still finer filaments, not more than 1-10,000th or 1-12,000th of an inch in size, that run between the muscular fibrillæ, where they elude further scrutity.

With regard to the plexiform arrangement of the terminal fibres of the nerves in the skin of the frog, our author speaks as follows:

Although the arrangement appears to the eye such as is described, further inquiries have shown that there is something beyond. Thus, fibres have been seen (by Todd and Bowman) passing from the plexus, through the superjacent layers of membrane towards the surface of the skin, and not visibly ending in loops, but becoming at last lost to view. In the eyelid of the frog, also, in which the plexiform arrangement of the fine nervous branches is readily seen, Henle observed nerve-fibres which ran singly a long way, and then disappeared, there being no evidence that they were continuous with others in the form of loops; some seemed to end abruptly, and this appearance, which Henle was disposed to consider fallacious, has since been described again by Hannover, who, moreover, saw other primitive fibres dividing into finer filaments, which were arranged into a plexus, and ultimately eluded the sight.

To these examples must be added the remarkable observations of Schwann on terminations of the nerves in the web or fin of the tadpole's tail. In that instance, as well as in the mesentery of amphibia, it appeared to Schwann that the ordinary primitive nerve-fibres, after separating from the fasciculi, divided into other fibres of much smaller size, and that the finer fibres resulting from this division, which were destitute of white substance, and wanted the dark outline, here and there presented little enlargements or nodules, from whence, again, delicate fibres spread out in various directions, and connect themselves in form of a network. Subsequent observation made by myself on the nerves of the tail of the tadpole, are confirmatory of those of Schwann. The fine fibres, which are derived from the division of the ordinary ones, want the bold, dark outline which usually marks the tubular fibres; they also present, here and there along their course, elongated corpuscles, like cell-nuclei, and, from their similarity in aspect to the gelatinous fibres, it might be supposed that they are really prolonged from gelatinous fibres mixed up with the tubular kind in the nervous

branches; there can be no doubt, however, as to their source, for fine tubular fibres may be traced, which change their character as they proceed, lose their dark outline, and pass continuously into these pale nucleiferous fibres; moreover, many of the decidedly tubular fibres in this situation are marked with nucleus-like corpuscles. The tubular fibres might thus be represented as laying aside their white substance and dark outline before dividing or terminating, like those ending in the Pacinian bodies; but in the present case (of the growing tail of the tadpole) the pale fibres are, in reality, to be considered as an earlier condition of tubular fibres in progress of development. Schwann, who adopts this view, states that the pale fibres are the forerunners of tubular fibres, and he conceives that they are converted into the latter by acquiring the white substance (medullary sheath), and with this the dark outline. Still, whether perfect or not, these fine fibres must be capable of receiving and conducting sensorial impressions applied to the decidedly sentient membrane in which they are distributed.

The whole account of the nervous system throughout is clear and precise. We quote from this part of the work only the following additional paragraph, a good summary of our actual knowledge of the structure and function of the great sympathetic.

From what has been stated, it seems reasonable to conclude that nerve-fibres take their rise in the ganglia both of the cerebro-spinal and sympathetic nerves, and are, in both kinds of nerves, mixed with fibres of cerebral or spinal origin; that the ganglia are nervous centres which probably receive, through afferent fibres, impressions of which we are unconscious, and reflect these impressional stimuli upon efferent or motor fibres; that perhaps, even, certain motorial stimuli emanate from them, the movements excited by or through the ganglia being always involuntary, and affecting chiefly the muscular parts of the viscera, the sanguiferous, and perhaps the absorbent vessels; and that, in fine, the chief purpose served in the animal economy by the ganglia and ganglionic nerve-fibres, whether existing in acknowledged branches of the symp-

pathetic, or contained in other nerves, is to govern the involuntary, and, for the most part, imperceptible movements of nutrition, in so far at least, as these movements are not dependent on the brain and spinal cord.

One more quotation, and we are done. It is in relation to a much controverted point, viz., the development of the capillary bloodvessels—which is now apparently in a fair way to be cleared up:

The smaller vessels and capillaries originate from nucleated cells similar to those which at first constitute the different parts of the embryo. The cell-wall or envelope of these cells shoots into the slender pointed processes, tending in different directions, so that they acquire an irregularly star-shaped or radiated figure. The prolongations from neighboring cells encounter one another, and join together by their ends; and the irregularly ramified or reticulated cavities thus produced, are the channels of the rudimental capillaries. In growing parts, where new vessels are formed in the vicinity of those already existing, not only do the processes of the stellate cells join those of neighboring cells, but some of them meet and join with similar pointed processes which shoot out from the sides of neighboring capillary vessels, and in this manner the new vessels are adopted into the existing system. The junctions of the cells with each other, or with capillary vessels, are at first of great tenuity, and contrast strongly with the central and wider parts of the cells; they appear then to be solid, but they afterwards become pervious and gradually widen, blood begins to pass through them, and the capillary network acquires a tolerably uniform calibre. The original vascular network may become closer by the formation of new vessels in its interstices; and this is effected by similarly-metamorphosed cells, arising in the areolæ, and joining at various points with the surrounding vessels, and also, according to Kölliker, simply by pointed off-shoots from the existing capillaries stretching across the intervals, and meeting from opposite sides, as when enlarged to form new connecting arches. From observations made on the fetal membranes of sheep, Mr. Paget has found that the mode of formation

of capillaries described by Kölliker in batrachians, holds good also in mammiferous animals.

Of the main body of the work—*Descriptive Anatomy*—but little need be said. Much of it is the same in words with the former standard edition, and such as has been changed at all, has been changed for the better. On the whole we know of no work, which we would sooner see in the hands of every student of this branch of medical science than Sharpey & Quain's Anatomy.

D. W. Y.

SELECTIONS

FROM

AMERICAN AND FOREIGN JOURNALS.

Zymotic Diseases—Typhus and Typhoid Fevers, Diagnosis of.—The readers of the "Half-yearly Abstract" have, at various times, been made acquainted with the discussions at home and abroad, upon the identity of typhus and typhoid fever. In addition to the opinions mentioned in former volumes, we shall here adduce those of two of the latest writers on the subject, Dr. Wood and Dr. Wilshire.

Dr. Wood, whose opportunities of witnessing the two forms of fever have been such as are afforded only in America, where they both rage with nearly equal intensity, expresses himself as follows on the means of distinguishing them:

"Typhus fever less frequently commences insensibly than enteric (typhoid), and is upon the average of shorter duration. Instead of diarrhea, or the susceptibility to purgatives, which attend the latter disease, there is usually constipation; and the fecal discharges are darker and more offensive. Hemorrhage from the bowels, which is not infrequent in the advanced stages of enteric fever, seldom occurs in typhus. In this complaint, epistaxis at the commencement is less frequent, there is more stupor, and a darker color of the face, more turbidness of the conjunctiva, and greater debility. The eruption in typhus also differs from that of enteric fever. It generally commences earlier, is not elevated, is of a darker hue, does not so readily disappear under pressure, is much

more abundant, and, instead of being confined to the abdomen and chest, is diffused over almost the whole body. In typhus, the abdomen is often flat, and perfectly free from tympanitis; which is never the case in enteric fever.

The anatomical characters of the two fevers are very different. The peculiar disease of the glands of Peyer, and of the mesenteric glands, so constantly present in enteric fever, is never found in typhus, or so seldom, as to lead to the suspicion of an intermixture of diseases when it does occur. The spleen is less frequently enlarged and softened in typhus.

Enteric fever almost never attacks the old, who are frequent victims of typhus. The former disease is endemic in various countries, arises here and there without obvious cause, and, if ever contagious, is very feebly so; while typhus seldom occurs in isolated cases, is always contagious, and often epidemic."

Nevertheless, the author admits there are cases of a mingled character, in which the elements of the two fevers may be supposed to co-exist.

The observations of Dr. Wilshire, which occur in the course of his valuable lectures on the diseases of infancy, are recapitulated briefly in the following tabular arrangement:

Typhoid Fever, Adynamic Fever, Asthenic Fever, Low Fever, &c., of France and Great Britain, &c.	*True Typus, Contagious Typhus, True Maculated Fever of Great Britain, &c. &c.*
NOT INFECTIOUS.	EMINENTLY INFECTIOUS.
Cutaneous eruption often wanting; does not appear so early; more of the nature of petechia; does not disappear under pressure—no true exanthema.	Cutaneous eruption a true exanthema—differing from petechia, which may accompany it—former of a reddish pink color, disappear under pressure, soon to return on removal of it—sometimes dark, like measles, and not removable by pressure.
Cerebral symptoms not appearing early—not so frequent.	Early delirium, stupor, or typhomania.
Course prolonged, fifteen to thirty days—relapses common.	Period of crisis about fourteenth day—relapses unfrequent.
Not common before fifteen years of age, nor after fifty.	Children often attacked when the disease is epidemic.
Attacks those predisposed to a febrile affection by exposure, vicissitudes, or is sporadic.	Generally presents itself as an epidemic, and may attack any one coming within its sphere.
May occur under the milder grades of the causes of typhus, or entirely without them—is sporadic.	Caused by the same—by famine as the predisposing cause; epidemic.
Derangement of alimentary canal constant—important alterations connected with the intestinal follicles found—spleen large—intestinal perforation frequent.	Post mortem results often negative, and when lesions are present, they bear no comparison with the severity and rapidity of production of those of typhoid fever.

Typhus Fever, Exanthematous Nature of.—Contrary to the opinions expressed by the writer last mentioned, Dr. Williman has endeavored to prove that typhoid fever is a true exanthema, and as such should be placed in the same catagory with other eruptive fevers. He bases his opinion upon their similarity in the fact of incubation, in the presence of a distinct eruption, in its prevalence consentaneously with other eruptive diseases, and, like them, in the subjects of it becoming exempt from a second attack. The analogy is further exemplified in a comparison of their respective pathological lesions.—*Ranking's Abstract.*

Photophobia, resulting from exalted sensibility of the sensitive branch of the fifth pair going to the eye from irritation of the sensitive branch of the same nerve going to the teeth.—Dr. Hays remarked, that he had seen, within a few years, some curious cases of exalted sensibility of the retina, from a cause which he believes has not been suspected of such an effect, viz: irritation of the dental branch of the fifth pair of nerves. These cases much interested him, and if the college had nothing better to occupy their attention, he would present a verbal sketch of a few of them; he had not prepared any written history of the cases, having no previous intention of submitting them at this meeting.

The first case occurred in a gentleman, the cashier of a bank in North Carolina. At the great fire in Wilmington, he had suffered considerable fatigue and exposure in endeavoring to save the books and papers of the bank, and had, subsequently, severely tried his eyes in arranging the documents which were rescued from the flames. He soon experienced great intolerance of light, and some inflammation of the conjunctiva. For this he was treated by the physicians in his vicinity, but with only temporary relief, except for the inflammation. He subsequently visited Virginia, and Raleigh, North Carolina, for medical advice; but from none of the remedies or plans of treatment employed in his case, did he experience the slightest permanent benefit; on the contrary, the photo-

phobia increased to such a degree as to render exposure to the least light perfect torture. Dr. Hays was written to. Believing the case to be one for which it was not possible to prescribe judiciously until he was enabled to make a thorough examination of it, he requested that the gentleman should be brought on to Philadelphia; but his friends, in reply, stated that this would scarcely be possible, in consequence of the excessive photophobia under which the patient labored, rendering the slightest degree of light intolerable.

Dr. Hays suggested that the eyes should be entirely defended from the access of light by covering them with a mass of wadded silk. This suggestion was adopted.

When the gentleman reached the city, Dr. H. found him laboring under the most aggravated degree of photophobia. In a room so perfectly dark that the Doctor was unable to see any object whatever, to the patient the light reflected from his own hands was intolerable, and that from his shirt bosom caused so much suffering that he was obliged to keep the latter constantly covered. The colored nurse, whom he had brought on to attend upon him, happening to enter the darkened room, the light from a white apron she wore produced the utmost suffering to the patient. So exalted was the sensibility of the retina, that, in the darkened room, where Dr. H. could not see his hand held up before him, the patient was able to distinguish the objects around him, even the figures in the carpet.

He was, at length, persuaded to submit to an examination of his eyes, which he bore with great fortitude.

Dr. Hays found scarcely a trace of inflammation of the eyes or of any other apparent disease. The stomach of the patient was somewhat deranged. This being remedied without relief to the photophobia, the doctor was induced to seek for some other source of irritation, and, after careful examination of the patient, he was induced to suspect that the teeth, several of which were defective, but not painful, might be the source of the evil. At his suggestion, a couple were extracted by a dentist, but without causing any diminution of the intolerance of light. After some eight or ten days, Dr. H. examined the patient's mouth himself, and upon striking one of the lateral upper incisors nearest to the eye most affected,

with a key, the patient winced as from pain, and stated that he had often experienced a disagreeable sensation to proceed from that tooth. The tooth was extracted; with the loss of the tooth, a most disagreeable gnawing or pinching sensation at the back of the eye, which had previously tormented the patient, ceased. At the root of the tooth, there was found a large abscess, while the periosteum of the alveole was thickened. From this time the morbid sensibility of the eyes rapidly diminished, and the patient was soon after sufficiently recovered to return home and resume his duties as cashier of the bank. When Dr. Hays last heard from him, which was the past summer, after an interval of nearly six years, he was perfectly well, having had no return of the photophobia.

The next case was one which Dr. H. saw last fall, in consultation with his friend Dr. Ashmead, in a Spanish gentleman, who had suffered two years previously from a slight attack of iritis. On recovering from this, he experienced, whenever he attempted to read, a peculiar uneasiness in his eyes. For this, he consulted Dr. Ashmead, who advised a voyage to New Orleans; finding no diminution in the affection of the eye, he proceeded from New Orleans to Cuba. The uneasiness still continuing unrelieved, he returned last fall to Philadelphia. Dr. H. now saw him with Dr. Ashmead, Upon examining the eyes, they were found to be without any trace of inflammation or other apparent disease. Still, whenever the patient attempted to read, the same uneasiness, which had now continued for some eighteen months, was experienced.

Judging from the circumstances of the case first detailed, Dr. H. was led to suspect that the source of the affection of the eye in the present case might be the same; he accordingly examined the patient's teeth, from which, according to his account, he had experienced no suffering. Finding some of the teeth diseased, the Doctor directed them to be extracted. Only one was taken out, when the patient's courage failed him, and no relief was afforded to the affection of the eye. Subsequently, another tooth was extracted, at the root of which an abscess was found to exist. The patient now declared himself entirely relieved from the uneasy sensation he had so long experienced in his eyes on attempting to read. He has since continued perfectly well; now eighteen months.

Another case occurred in a lady, marked by the same intolerance of light as in the case first described; in which Dr. Hays had every reason to believe that the morbid sensibility of the retina was produced by irritation of the dental branch of the fifth pair of nerves. On examining the patient's teeth, several were found diseased. Five were extracted; at the roots of three of them there existed an abscess. The gums continued sore for some time; but the photophobia was considerably relieved. The patient passed from under the care of Dr. Hays into that of another physician. He heard subsequently that she had entirely recovered; and as no other treatment had been resorted to in her case, excepting covering the eye with a single slip of linen moistened with water, and a shower bath, he believes that he is not in error in referring the cure in this case to the extraction of the diseased teeth.

The last case he shall refer to was that of a young lady from the West. She had been subject to frequent severe attacks of inflammation of the eyes. In July last she suffered from one of these attacks, which was followed by excessive intolerance of light, that no remedy employed seemed in the least to relieve. She was taken to Washington City, where she was pronounced to be incurable by several physicians to whom her case was made known. She was then brought on to Philadelphia, and placed under the care of Dr. H. At his first visit, so great was the intolerance of light, that no satisfactory examination of the eyes could be made. From the imperfect view Dr. H. obtained of them, he ascertained that they were somewhat inflamed, and that a slight opacity of the cornea existed. Several of the young lady's teeth were decayed. Dr. H. directed two to be extracted, but without much relief to the morbid sensibility of the eyes. In a week or ten days, two more of the teeth were extracted from the upper jaw. After a few days the intolerance of light was greatly diminished. The lids were painted with tincture of iodine, and treatment directed, calculated for the relief of the vascularity and opacity of the cornea, and in three months, she so far recovered as to be able to read in a diamond print bible, and bear an ordinary degree of light, when she left for home. Since then the Doctor has not heard from her.

If he is not mistaken in his view of these cases, and he could relate several others of the same character, Dr. Hays believes they very conclusively show that intolerance of light, and other uneasy sensations of the eye, may originate in an irritation of the dental branch of the fifth pair of nerves, resulting from diseased teeth—and the cure of which can only be effected by the removal of the latter. The first two cases appear to prove this incontestably; the symptoms, after resisting all the other means of cure adopted, promptly disappeared upon the extraction of one or more decayed teeth, thus showing the due relation between the effect and its cause. In the last described case, though the intolerance of light was, no doubt, owing to the inflammation of the eye itself, still he conceives that it was in part, at least, kept up by irritation of the dental branch of the fifth pair, from decayed teeth.—*Transactions of the Philadelphia College of Physicians.*

Nurses' Sore Mouth. By J. Yale Ware, Mass.—This is a very troublesome complaint of mothers, and one that is rapidly increasing in this section. An infallible remedy when it does not purge the bowels, is Griffitt's Myrrh Mixture, in tablespoonful doses three times a day, internally, and a solution of nitrate of silver gr. viii to ℥iv of pure water for a gargle, and, if the soreness extends towards the stomach, swallow a teaspoonful three times a day. Of course, if need be, the stomach should be cleansed by a light emetic or gentle laxative, antecedent to the above treatment. I believe, if perseveringly used in season, very few mothers need wean their children from this cause; indeed, I have never known it fail to relieve the mouth.—*Am. Jour. of Med. Sciences.*

Aphtha. By J. Yale Ware, Mass.—The following simple prescription has proved a specific in my hands in many hundred cases of aphtha. I learned it of Dr. Eli Ives, New Haven. ℞.—Ipecac. gr. vi; tinct. opii; ess. pep., aa gtt. iv; boiling water xxiv teaspoonfuls. Sweet-

en with loaf sugar. Dose, a teaspoonful every two hours. At the same time apply to the tongue equal parts of a powder of borax and loaf sugar, which the child will carry over the mouth. I have never known the above to fail in any case of infants' sore mouth. It generally cures in two days. Occasionally, in delicate subjects, the disease returns again, when the remedy needs repeating.

On the Employment of Nitrate of Silver as a Vesicant. By M. Delvaux.—The general action of nitrate of silver on the tissues, seems to be to separate the hydrogen. When this salt is brought in contact with an organic body, it becomes decomposed into nitric acid, oxygen, and metallic silver, in a molecular state. Silver is deposited, and this imparts to the tissue its coloration, whilst the oxygen of the oxide of silver and of the decomposed nitric acid takes up the hydrogen to form water.

When nitrate of silver is brought in contact with the skin, the effect produced varies according to the greater or smaller quantity of salt employed. If the quantity be small, it merely acts on the epidermic cells, which it disorganizes. Metallic silver is reduced to a molecular state, and combines with their elements; the epidermic tissue assumes a blackish brown coloration, owing to the metallic silver itself, and after a time the tissue is detached and drops. Where the action of the nitrate of silver is continued for a longer period of time, the true skin itself becomes affected, the effect produced varying according to whether the disorganization is merely on the surface, or more deeply seated. In the former case, an abundant serosity raises the altered epidermic surface, and produces vesication. In the latter, the true skin, being disorganized in thickness, produces an eschar.

If now, we consider that the skin varies in thickness and sensibility in different parts of the body, and according to age, sex, &c., it will be evident that a certain tact is required to regulate the quantity of nitrate of silver necessary to disorganize the epidermic layers, and procure a vesicatory effect without disorganizing the true skin. The principles by which the employment of es-

charotics in general is guided will suffice to prevent the occurrence of any unexpected results.

Without proceeding to enumerate all the diseases in which vesication by means of nitrate of silver may produce beneficial therapeutic effects, we will adduce a few cases in refutation of the objections that might be advanced against this form of application.

1. M. Claes, a patient in the hospital of des Viellards, who was recovering from an attack of adynamic pleuropneumonia with parotitis, complained, on the 3d of September, 1848, of severe pain in the left sub-scapular region, and in the lateral portion of the neck, along the trapezius muscle. The pains increased on the least movement. Exposure to a current of air had given origin to this rheumatic affection. The skin was cauterized in the sub-scapular region with a stick of nitrate of silver, moistened with water at the moment of its application. A bulla appeared in the course of an hour and a half; epidermis being removed, a slight degree of suppuration was established, and the pain entirely ceased, as if by magic, at the end of about ten hours.

The cauterized spot had been dressed immediately after cauterization with cold cream, and this was continued until the occurrence of cicatrization, which took place within the fourth day.

2. A man named Boufort, came to consult M. Uytterhoeven, at the same hospital. The old man had suffered since the preceding evening from acute stitch in the side. The pains extended along the seventh rib towards the back. As auscultation did not reveal anything abnormal in the thoracic organs, the spot to which the patient referred the pain was cauterized with nitrate of silver, previously moistened with water. The pain disappeared as the operation advanced. A vesicle was produced in the course of an hour. A compress with cerate was applied to the wound. On the following day the pleurodynia was perfectly cured without the treatment being further continued.

3. The same method was immediately employed in the case of Marie Demaitre, who had been attacked by pleurodynia in the left side of the thorax. The pain was so violent as to call forth loud cries from the patient. The cure was equally prompt and unexpected, and in the

course of the day the pain entirely disappeared. The vesication was treated in the manner usually adopted in the case of ordinary vesicants.

It only remains to add a word or two on the mode of operation of this vesicant. In order to avoid all chance of irregularity, it is necessary to rub the whole surface on which vesication is to be induced, lightly but equally with the point of the stick moistened with a drop of water, and to continue long enough until a gray coloration is produced. This effect is generally obtained in a minute and a half. If a deeper action be required, owing to the thickness of the epidermis, or a more strongly marked therapeutic effect be sought, the operation must be repeated over the same surface and with the same precautions.

M. V. Uytterhoeven has always found this vesicant answer his expectations most fully, both in private practice and in the wards of the hospital des Viellards.—*Monthly Retrospect*, June, 1849, from *Nouvelliste Médicale Belge.*

The Mechanical Leech of MM. Alexandre & Co. of Paris.—This apparatus consists essentially of two parts —an instrument for puncturing the skin, and another for promoting the flow of blood by removing atmospheric pressure from the punctured part. The puncture is effected by a lancet, the blade of which has the form of the cutting apparatus of the leech. This lancet is fixed in the mouth of a tube, and projects about the eighth of an inch beyond the edge of the tube. It may be elevated by a small lever, so that its point shall be within the tube, in which position it is secured by a catch. Attached to the opposite end of the tube, by a piece of vulcanized India-rubber, which acts as a spring, is a piston, which is pressed down by a rod, and on removing the pressure, is drawn back by the India-rubber spring. The piston being pressed down, the open end of the tube in which the lancet is fixed, is placed over the part to be punctured: the pressure is now removed, when the piston is drawn back by the spring, and exhausting the air within the tube, the skin is forced up into the mouth of the tube. On loosening the lever, by which the lancet has been ele-

vated, the latter is drawn down by a spring, also of vulcanized India-rubber, so as to effect the puncture. The cutting instrument is now removed, and a glass tube with a piston, similar to that already described, is placed over the puncture, the air within being exhausted so that the tube adheres to the part, and the blood flows freely into it. Half a dozen or a dozen tubes, each of which would draw as much blood as a large leech, might be thus attached in two or three minutes. The apparatus, consisting of a cutting instrument and six or twelve suction tubes, together with sundry implements for cleaning the lancet and tubes after use, are contained in a small case. It is very neatly got up, and we understand from those who have used it, is very efficient. The idea, however, is not new; so long ago as the year 1813, the silver medal was awarded at the Society of Arts to Mr. J. Whitford, of St. Bartholomew's Hospital, for the invention of a somewhat similar apparatus for the same purpose. In Mr. Whitford's apparatus the exhaustion was effected by a syringe, which was found to be inconvenient. The use of vulcanized India-rubber springs, attached to the pistons, by which efficient suction tubes are economically formed, is a great improvement in MM. Alexandre & Co.'s apparatus.—*London Med. Journal*, March, from *Pharm. Journal*, February, 1849.

On the Analogy and Differences between Tubercle and Scrofula.—M. A. Legrand concludes an elaborate and valuable series of papers, extending through several Nos. of the *Revue Médicale*, for last year, the fruit of many years' research, he informs us, with the following summary of the results at which he has arrived:

1. There undoubtedly exist analogies, which we may call symptomatic, between tubercle and scrofula; that is to say, one of these two morbid principles, the tubercular, may exhibit itself by symptoms which appear to belong to the other; but this is not the case with regard to the latter.

2. Tubercle possesses, so to speak, its morbid individuality, its molecular element—the tubercular globule—which is often met with in the scrofulous manifestations of tubercle.

3. Scrofula is always deficient in the morbid molecular element, and its existence is only proved by the constancy of the effects which are attributed to it.

4. The chief, or even the only seat of tubercle is in the internal organs, and the external manifestations of the morbid principle irradiate from the centre to the circumference.

5. Scrofula comports itself quite otherwise, and manifesting itself on the skin or periosteum, irradiates thence towards the internal organs, which, however, it never disorganizes in the same manner as tubercle.

6. Tubercle, in spite of the impoverishment of the blood it always induces, does not destroy, at least in the early periods, the inflammatory element, the fibrine, which well explains the occurrence of the phlegmasiæ, which so often complicate it, and which always hasten its disorganizing progress.

7. Scrofula likewise impoverishes the blood, but at the same time it seems to annihilate the inflammatory element. Thus inflammations rarely complicate it, and when such complication does exist, it often favors the cure of the disease.

8. All the changes observed in the blood and urine of tuberculous and scrofulous patients, are evidently consecutive; and they cannot be considered as the cause of these two diseases, whose principle is nevertheless very probably contained in the blood.

9. Finally, tubercle is never curable, or at least such cure constitutes a rare exception, while scrofula is almost always curable.—*Revue Médicale*, Nov., 1848.

On the Simultaneous Development of Variola and Vaccinia. By MM. Herard and Bousquet.—M. Herard having had, at the Children's Hospital at Paris (where children are so wantonly exposed to the danger of contracting small pox prior to their vaccination), the opportunity of observing eighteen cases of the co-existence of the two diseases, he is desirous of expressing his opinion upon the disputed question as to the degree of influence they exert upon each other.

Of these eighteen children (from twenty months to

four years old) seven died; all these being, however, cachectic, or exhausted by prior disease. In them, the small-pox was rarely confluent, but it was irregular and ill developed. In the eleven cases which recovered, the eruption was discrete, rapid in its course, and unaccompanied by suppuration of the pustules, or tumefaction of the surrounding skin. The fever was slight, and the convalescence rapid. During this benign progress of these cases, the disease more than once proved very fatal to non-vaccinated children. Had the vaccine acted injuriously in the seven children who died? MM. Rilliet, Barthez, and Legendre answer this question in the affirmative, believing the vaccination hastens the evolution of the variola, and increases the debility—opinions with which M. Herard does not agree. He also, in the eleven successful cases, observed no difference produced in the mode of the development of the vaccine vesicle; but in the seven children who died from various complications the vaccine was in a very languishing condition. The following are the general conclusions arrived at:

1. When the two eruptions are developed at the same time in a healthy child, the variola is advantageously modified. Its progress is more rapid, and the eruption is more discrete—taking on the character of varioloid.

2. Although vaccination is far from exerting the same effect, and especially in hospitals, on very young and diseased children, being innocent, it should be practiced. The danger in these cases is attributable to the small-pox not to the vaccination, and is produced by complications and bad hygienic conditions.

3. It is not correct to say that the two eruptions exert a reciprocal modification. That which has the priority of invasion (not of infection) influences the other, but is not influenced by it; and as, in almost all cases, the vaccine, to become developed, must precede the variola, we may generally state that, in the cases where the diseases exist simultaneously, the vaccinia undergoes no modification. —*L'Union Médicale.*

M. Bousquet states that an attentive examination of the voluminous correspondence of the Académie reveals the greatest discrepancy of opinion upon this subject. For his own part, he denies that vaccinia modifies the progress of small-pox advantageously; and considers it

a false deduction to suppose that, because vaccinia prevents variola, it must restrain its advantages when the two diseases meet together. According to MM. Rayer and Clerault's statistics, of one hundred and eleven cases of simultaneous existence of the two diseases, twelve died, and M. Legendre states that nine of fifty-six died; but small-pox, unaided by vaccination, is not more fatal than this. Of M. Herard's eighteen cases, seven died, and there is no reason to agree with him that the remaining eleven were milder because of the vaccinia. MM. Rilliet and Barthez declare that in very young infants it increases danger; but M. Bousquet agrees with neither party. Those who maintain that small-pox is rendered more discrete by vaccination, take only the successful cases, forgetting that, in the natural small-pox, the discrete exceed the confluent cases in the proportion of ten to one.

M. Bousquet therefore denies that the two eruptions exert any reciprocal reaction; and the nearer they appear together, the more independent are they of each other. Suppose, e. g., that the two could appear at the same hour; then each would pursue its ordinary course, just as if the other were not present. But supposing the one eruption appears after the other, all will depend upon the space of time separating them. If this be only some hours, or even two or three days, all passes on as just stated. The case is different, when one of these eruptions is greatly in advance of the other. If this is not to such an extent as to exclude, the eruptions progress together, but not in parallel. The most advanced always keeps its advantage, and finishes at its ordinary epoch, without having undergone any change in form or duration. The other follows it at a distance; but after the variolous capacity of the subject has become exhausted by the first, the second dies away. In these influences there is nothing direct, active, or special; they are the consequences of the faculty possessed by the eruptions of supplying or substituting each other. The vaccinia does not arrest the variola, but it is the variola that stops short in the face of the vaccinia; and, conversely, variola does not cut short the course of vaccinia, but this last interrupts its own course in presence of the variola. It is the right of precedence; and the more widely the two

eruptions are separated, the more readily do they exclude each other; while the nearer they are together, the more independently do they proceed. Considered in themselves, the vaccine and variolous virus are so little capable of destroying each other's energy, that if they are mixed together, and inoculation performed with the mixture, two perfectly distinct eruptions are produced. Considered as regards their effects, we cannot say that vaccinia *cures* variola, or even, rigorously speaking, that it *prevents* it. It takes its place, stands in its stead, and is neither more nor less than a substitution. Thus, so far from explaining the operation of vaccinia by the supposed opposition it offers to variola, we would rather do so by the analogy and reciprocal action of the two diseases.—*Bulletin de Thérapeutique.*

Arterial Compression as an Antiphlogistic.—Dr. Henroz de Marche has published a work on the value of compressing the brachial artery in cases of whitlow to check the inflammatory process in the finger; this seems but an exaggeration of M. Gerdy's principle of keeping the limb elevated so as to lessen the force of the arterial circulation in the inflamed part. Dr. Henroz was one day in his garden pruning an arbutus, and got a prick of a thorn in his left ring-finger at the inner side of the third phalanx; the thorn was extracted, and for twenty-four hours he felt no uneasiness in the part; the finger at this time began to swell rapidly, and to grow red, and the inflammation extended by degrees to the palm and back of the hand. On the fourth day, the pain was pulsatile and severe; he could not sleep; had great thirst; skin hot, and pulse frequent; the axillary glands were swollen but indolent. Stuping, leeches, poultices, opiates, mercurial frictions, were in their turn tried without advantage. It then occurred to M. Henroz to try compression of the brachial artery, which he did immediately with his thumb —instantly, the severe pain which he had endured for five days ceased, as if by magic, and he was able, without the slightest uneasiness, to put his hand into any position he pleased, and even the redness disappeared completely. However, as it was impossible to maintain the pressure

in this manner for any length of time, he contrived an instrument for the purpose, so simple in its construction as perhaps to make it a valuable aid in such cases in the country, where more perfect ones could not be readily had. It was applied on the brachial artery, and the same good effects immediately followed as when compression was made with the thumb; it was left on for three hours, during which the pain in the hand did not recur for an instant; it was pale and cool, and the swelling had diminished. Fearing that a longer interruption to the circulation might produce ill consequences, M. Henroz suspended the compression for three-quarters of an hour. The pain returned; pressure was again made, but this time it was on the ulnar not the brachial artery, and the symptoms were as suddenly relieved as in the former case.—Compression on the artery was thus continued from half-past twelve at noon until five o'clock in the evening, as well as the palm and dorsum of the hand with firm compresses of wadding, at which time the tumefaction of the hand and finger was permanently reduced, as also the tenderness; the symptoms of reaction had ceased, and there were no longer pain or fever. In the evening, pressure was again made; and continued all night; the next day the cure was complete.

The same treatment was employed by M. Henroz with the same result on a young girl who had a very severe whitlow; in this case, in which the affection was eight days progressing, the pain left the part the instant the compression was applied, and the cure was complete in thirty-six hours.—*Journal de Médicine.*

Femoral Aneurism.—Mr. Tufnell communicated to the Surgical Society of Ireland (Feb. 17, 1849) the following extremely interesting case of femoral aneurism. The subject of it was an Irishman, a sergeant of infantry, aged 34, five feet ten inches in height, a strong and very healthy man, of temperate habits, and extreme moral courage. On the 10th of March, 1848, whilst at drill, performing the extension motions, and endeavoring to touch the ground without bending the knees, he felt something snap in the fold of the left groin. He did not

suffer pain or inconvenience, and made no report of the circumstance. The day but one following he marched a distance of eighteen Irish miles. His foot and leg swelled upon this occasion, and continued to do so for several days, when, finding the edema so great as to prevent him from wearing his boot, he went into hospital, complaining of being footsore from the march. He rested in bed for a short time, and the swelling gradually subsided. He returned, therefore, to his duty, and continued at it for upwards of a week, when, being engaged in the escort of provisions, and finding himself unequal for the duty, he was readmitted into the hospital, complaining of edema and leg weariness as before. Rest in the recumbent position again relieved the swelling, and he reported himself as fit for his duty. He was accordingly a second time discharged, and was immediately sent (being a steady, intelligent man) on the recruiting service to England.

Here, during a period of several months, he performed every duty required of him. He stated that, shortly after leaving the regiment, the swelling of the leg became constant, and a small tumour gradually formed in the fold of the left thigh, which at first he could perceive in the night, when in bed, ticking like a clock, but that afterwards, as the swelling increased, the pulsation became indistinct. He never sought for medical relief, but was daily walking about, searching for recruits. This state of things continued until early in the month of October, when the pain in the thigh and leg (especially after standing for several hours), became so severe as to oblige him to apply for permission to return to his regiment. He was accordingly recalled, but on rejoining his corps, he made no further complaint, and continued to perform the ordinary duties of a sergeant until the 22d of December last. On that day he went to the hospital, and exhibited to the medical officer of his corps a large, pale tumour, situated at the fold of the left thigh, immediately below Poupart's ligament, and encroaching upwards upon the abdomen.

The emergency of the case was reported by the medical officer to Sir James Pitcairn, the inspector-general of hospitals, who immediately ordered a medical board to assemble and report upon the practicability of removing the man to Dublin, in order that he might have the ad-

vantage of treatment in the Royal Infirmary. The board having reported that he could be safely removed by short stages and under proper escort, he was accordingly ordered up, and arrived at the Military Hospital on the 20th of January, and was placed under Dr. Fox's care.

The aspect of the tumour at this time was frightful from its size, and bore somewhat the appearance of fungous hæmatodes. It rose in a sugarloaf form from the centre of the left groin, measuring one foot eleven inches round the base, and eleven inches across the top. Its base was pink and slightly inflamed, its apex purple, with the skin considerably abraded, marking an incipient slough. Pulsation was visible by placing a piece of paper on the surface, or applying the hands to the sides of the tumour, whilst a distinct single bruit could be heard throughout. The tumour encroached greatly upon the abdomen, its upper border being level with the brim of the pelvis. The thigh was enormously swollen, being twice the size of the other; but the limb below was not correspondingly increased, the foot being only one inch and a half, and the calf of the leg only three inches larger than that of the opposite side. The temperature was equal in both; the posterior tibial artery could not be felt on the affected side, but pulsation in the popliteal was doubtful.

To view this man lying in bed, no suspicion of such disease could have been entertained. His eye was clear and bright, his countenance placid, not in any way expressive of suffering, and he made no complaint. When questioned, he said that the pain, which had been severe during the journey, had subsided, and that he felt tolerably well. His tongue was moist; his pulse one hundred, regular and soft; he had slept soundly the preceding night under the influence of an anodyne, and awoke free from headache; all that he complained of was, that his appetite was failing, and that he felt correspondingly weak.

A consultation on the case held on the 22d, Sir James Pitcairn, Staff-Surgeons Sinclair, Scott, and Fox, and Assistant-Surgeons Barrett and Ivey, with Sir Philip Crampton, Mr. Cusack, and Dr. Adams being present. It was unanimously determined, under the circumstances, not to interfere, unless compelled to do so by the sack giving

way, but to leave the case to nature, in the hope that, as the pulsation was very indistinct and gradually declining, it might spontaneously cease, the artery be obliterated above, the sack become filled with coagula, and the aneurism eventually slough out; such a termination having twice occurred in somewhat similar cases in the practice of Sir Philip Crampton.

Cold lotions were ordered to be applied to the tumour, the patient's strength to be kept up by strong beef-tea, and rest to be procured by opium at night.

On the 23d, no change whatever had taken place.

On the 24th, he was not so well. He had perspired profusely through the night, the sweat having an acid, rheumatic odor. The tongue was dry, and he complained of thirst. The pulse was increased in frequency, being one hundred and twenty in the minute. Pain had returned in the tumour, which, he said, felt as if hot water were poured upon it. The pulsation was not perceptible and the bruit could be distinguished only by applying the ear directly to the tumour: it was inaudible through the medium of a stethoscope. The surface of the tumour was more livid, and edema slightly increased; but the temperature of the leg was natural and equal to that of the opposite limb.

The same treatment was ordered to be continued.

On the 25th there was an apparent improvement in his general condition, the pulse having come down to one hundred and eight, the tongue become moist, and the thirst less urgent. The pain in the tumour had subsided, and he complained only when the limb was stirred; but the tumour itself had increased in size, its surface being livid, indeed almost black, the skin abraded, and weeping sanguinous fluid sufficient to tinge the cloth by which the lotion was applied. The discoloration of the surface extended over the brim of the pelvis, giving an ecchymosed appearance to the integuments down as low as the side of the nates. The temperature of the limb was unchanged.

During the course of this day, a bulging prominence presented itself to the outer edge of the tumour, having much the appearance of a knuckle of livid intestine.—Drs. Fox and Barrett, who were in close attendance upon the patient, now determined to cut down through the cen-

tre of the tumour, and tie the vessel as it entered the sac, as soon as ever the first oozing of blood should appear.

Their opinion, indeed, was not to wait for the occurrence of this event, lest the jet of blood should be too great for the patient to bear, but to anticipate what now appeared to be almost inevitable. The general impression, however, upon the minds of the members of the consultation being, that, from the mass of coagulum then lying between the artery and the surface of the tumour, the vent would not be followed by violent hemorrhage, they were inclined to hold their hands, and give nature every chance, waiting ready to interfere as soon as all further hope was removed.

This event occurred at 6 P. M. The patient was in the act of moving the limb when the aneurism suddenly burst —the blood spouting in a heavy jet full three feet from the bed! Compression upon the aorta was instantly made by Dr. Barrett, whilst Dr. Fox, assisted by Dr. Ivey, carried a free incision through the centre of the tumour, (turning out the mass of clot and gore contained in the sac,) and quickly placing a ligature round the mouth of the artery as it entered the sac. No hemorrhage took place, and not an ounce of blood was lost during the operation, which was borne with the greatest fortitude by the patient, who expressed himself as relieved by the removal of the tension of the tumour. An opiate was subsequently administered, and he slept soundly for four hours. He then dozed at intervals, between which he appeared to become fainter and fainter. Wine had been freely given both before and after the operation; but, in spite of all stimulants, his extremities gradually grew cold, and he died slowly off, at four o'clock, on the morning of the 26th, ten hours after the vessel had been secured. There was no return of hemorrhage from the lower end of the artery, and the ligature after death was found firmly and closely fixed round the mouth of the vessel. And here I cannot refrain from testifying to the able manner in which this operation was performed, under circumstances of no ordinary difficulty, by Dr. Fox and the gentlemen associated with him. The sudden loss of blood, consequent upon the rupture of the sac, though borne against for a time, appears to have been too great for the powers of life ultimately to withstand.

Upon examining the body thirty hours after death, it presented a very different appearance, as far as regards the tumour, from what it bore during life, its contents being removed, and the integuments of the groin lying flaccid and flat. The superior extremities were muscular, and the thorax and ribs well clothed, although, judging from the comparative size of the lower extremities, as exhibited in the drawing and cast, it might be inferred that the patient was emaciated, and ran down. On opening the cavity of the abdomen, the viscera and peritoneum were in a perfectly healthy state. The iliac arteries were healthy, and no abnormal condition of the parts could be detected, except that the tendons of the oblique and transversalis muscles on the left side were loose and lying in a fold, having, during life, been distended and pushed upwards by the aneurismal sac. The lymphatic glands were numerous and enlarged.

Upon dissecting the aneurism itself by reflecting the integuments, the sac was found to originate from the femoral artery, immediately after passing from beneath Poupart's ligament. The sac was of an hourglass form, being constricted by the fascia lata, the portion beneath the fascia extending in an oblique line downwards to the canal in the adductors; the portion above the fascia rising directly forwards and upwards, forming the tumour, represented by the cast. Anteriorly, the tumour was covered by the sartorious muscle, which was spread over it to the width of four inches; posteriorly, it sank deep into the structures of the thigh, pressing against the capsule of the hip-joint, as well as against the neck of the femur. This pressure had been sufficient to create inflammation of the synovial membrane of the joint, as well as the cartilage on the head of the bone, which bore an arborescent appearance from the red vessels ramifying in it. The periosteum was also removed from the anterior part of the neck of the femur, the bone being abraded and rough. To the outer side the sack was bounded by the shaft of the femur, and to the inner side it wended its way through the adductor muscles, the fibres of which, (together with all the others in the neighborhood), were stretched around the sac, forming as it were its superficial coat, the middle being a condensation of the tissues, and the innermost a lining of fibrine. The sac was still circumscribed below.

Upon examining the preparation, and tracing the iliac artery from above, it appears to be perfectly healthy, and of a natural size. It enters the sac by a small rounded opening, the edges of which are abraded by the ligature which was placed upon it as a temporary restraint to the hemorrhage, prior to securing the vessel above. The sac itself is polished throughout, lined by a thin layer of fibrine, rendered smooth by the friction of the blood. It measures, in its present state, after being immersed in alum, (and thereby greatly constringed,) eleven inches in length, and seventeen in circumference.

Its inferior connection with the artery is similar to the superior, being perfectly round and even, situated from it at a distance of three inches in a direct line. The femoral artery beyond the sac, is perfectly healthy, running in its usual course to the canal in the adductors, at which spot it has been divided across. The artery, therefore, retains its normal condition, except as regards the formation of the aneurismal sac.

Not so the vein. Viewed from above, it is seen to be separated from the artery, the sac of the aneurism carrying it off at an angle, and pushing it rather to the outer side of the artery, and after traversing the superior surface of the aneurism for a couple of inches, it becomes obliterated, not permitting even a probe to pass. Below the tumour it has become completely transposed, lying altogether to the outer side of the artery, and maintaining this situation until it reaches the canal in the adductors, where it winds round the vessel and regains its natural position. From the sac, for the distance of two and a half inches, it has become obliterated, assuming the appearance of, and feeling to the touch, like an artery plugged up with fibrine. Below this point it becomes pervious, and at the entrance to the tendinous canal resumes its normal size and shape. The vessels arising from the femoral artery are all obliterated at the sac, and, as it were, imbedded in its walls. The crural nerves are greatly stretched, flattened, and apparently enlarged.

These are the principal points to be observed in the morbid specimen itself. "The one, however," remarked Mr. Tuffnell, "to which our attention as surgeons should be directed, is: What mode of treatment could have been adopted that would have afforded any prospect of saving life?

"In the first place, the tumour had acquired such an enormous size, and so encroached upon the contents of the abdomen, lying, as it were, over and upon the external iliac artery, as to render it almost impossible to get at this vessel while the sac remained entire; the incision ordinarily made for the purpose of securing the external iliac artery, instead of coming down upon it, would have disclosed only the sac itself, with the external oblique and transversalis fascia distended upon it. The projection of the tumour into the abdomen precluded, therefore, this operation, unless it was preceded by evacuation of the contents of the sac, thereby restoring Poupart's ligament and its component tendons to their usual site. This, then, I consider, (if a similar case should occur,) ought to be the primary step, and that the operation performed by Dr. Fox, of cutting through the centre of the tumour, turning out its contents, and tying the vessel as it entered the sac, should be the first thing done. The next step should be the placing of a ligature on the external iliac artery; and the final one, the removal of the limb at the hip.

"'Heroic' as this may appear, I feel certain that nothing short of it could offer any chance of life. Suppose that, instead of resorting to removal of the limb, we secure the artery only. We leave the patient then with the supply of blood to the limb almost totally cut off, for the pressure of the sac has obliterated nearly every branch of communication with the vessels above, and gangrene of the limb, I may say, would be inevitable. Should this event, by some possibility, not occur, there would still remain a cavity in the muscles of the limb, a vast suppurating sac, from which hectic would assuredly follow, and quickly run the patient down.

"There would also, in addition, exist general synovitis of the joint and erosion of the neck of the bone. These, however, depending upon a cause—namely, the pressure of the sac—which would now be removed, I will not throw much stress upon them, as they might spontaneously cease, and the reasons I have given above are alone, I think, fully sufficient to warrant the operation of removing the joint of the hip.

"This form of amputation has for the most part hitherto proved fatal, not from the loss of blood, but from

the shock to the nervous system in general, and it remains for experience to show whether, under the influence of chloroform, we may not anticipate happier results.

"Such, I consider, will be the case; for, judging from the numerous instances in which I have myself used and seen chloroform employed by others, there has not appeared to be greater appreciation of injury to the frame where amputation has been resorted to than where a single tooth has been removed."

"Dr. Bellingham had had the opportunity of seeing this case, and would take the liberty of offering a few remarks upon it. Many similar cases might, he observed, be found in the works of the older writers on surgery, in some of which a spontaneous cure took place, in consequence of the aneurism increasing so much in bulk as to press upon and obliterate the artery above the seat of the aneurism, after which suppuration ensued in the sac, and the patient ultimately recovered. In the case before the society, when the patient entered the Military Infirmary, there appeared to be no chance of a spontaneous cure taking place, the skin being, at that time, on the point of giving way. If, on the other hand, the common iliac artery had been tied, gangrene would undoubtedly have set in, or the sac would have suppurated, and the patient have been finally run down by hectic fever. With respect to Mr. Tufnell's suggestion of amputation at the hip joint, he was inclined to think that an operation which had succeeded in so few cases must inevitably have proved fatal in a case of so serious a nature as this, where the limb was extensively engorged. He considered that the plan recommended by Mr. Adams was that which gave the only chance of success. Whether the disease was left to itself, or whether the external iliac artery was tied, he must equally have died; but he thought the sac (as Mr. Adams had recommended), might with advantage have been laid open, the coagula turned out, and the case treated as a wounded artery, the vessel being tied both above and below the aneurismal sac."—*Dublin Medical Press.*

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CHOLERA IN RUTHERFORD COUNTY, TENNESSEE.

This disease has not yet been epidemic in this county, but some cases have occurred under circumstances which appear to us instructive.

During the time when the epidemic was most fatal in Nashville, a man of dissipated habits, who had been to that city, was attacked with the disease on his return home, and died. A number of the persons who attended him in his illness, and assisted at his burial, were seized with the complaint in a few days, and also died. The disease did not afterwards spread.

A man, residing in another quarter of the county, contracted the seeds of the disease on a steamboat, and died in a few days after reaching his home. No other case occurred in his neighborhood.

These two cases are an offset to each other. The first favors the idea of contagion; but the other shows that something else is necessary to the propagation of the disorder than the introduction of a case into a neighborhood.

On the 17th of July, the wife of a laboring man, living thirty miles from Nashville, on the Milton turnpike, was attacked, and died after fifteen hours illness, with well-marked symptoms of cholera. Her son, aged 17 years, was attacked shortly afterwards, but his symptoms being attended to at an early period, he recovered after a hard struggle.

In a week from this date, a negro woman, at Epps Matthews, on the

same road, died of cholera; and in a week after her death, her husband was attacked and died. Two days subsequently, William Matthews, the master of the last named slave, residing within a few hundred yards of his brother, was seized with violent symptoms of the disease, and died after an illness of thirteen hours. On the same night a second negro died at the farm of Epps Matthews. The families, after this, deserted their houses, and no new cases occurred among them; nor did the disease spread through the neighborhood.

On the farm of J. B. Rucker, two miles south of the Matthews', a negro woman was attacked with the disease, and died on the 8th of August, five days after the death of W. M. Mr. Rucker at once removed his negroes from their houses and built tents for them in the woods, where they have remained, now two weeks, entirely exempt from the malady.

An intemperate man, residing two miles east of Mr. R.'s, was affected with alarming symptoms on the 13th of August, but by timely medical aid, he was relieved. On the 18th, a negro woman, at Dr. Rucker's, close by, was attacked, and, a few days before, three fatal cases occurred among negroes in the neighborhood of Murfreesborough, four miles distant. None of these cases could be traced to intercourse among the affected.

In nearly all the cases, it appeared, on questioning the subjects, that diarrhea had preceded the violent symptoms from two to three days. In every instance, thus far, the spread of the pestilence has been arrested by the removal of the people from their houses.

The character of these houses merits a passing remark. They are, without an exception, small, low, ill-ventilated and filthy, with floors on the ground, and consequently damp in wet weather; in a word, precisely the abodes in which cholera would be expected to make its appearance. Whether from these wretched hovels it will ascend to the comfortable dwellings of the masters of the slaves, remains to be seen. Up to the present day (21st August) no such tendency is observable.

The weather has been such as has generally attended epidemic cholera in this country. The east wind has prevailed almost uninterruptedly, and with it there have been frequent and most abundant rains. During the month of July, few days passed without a shower, and on one or two the full average monthly mean is computed to have fallen. A state of weather more exactly resembling that which preceded the irruption of cholera at Lexington, in 1833, could not be imagined. The ther-

mometer frequently rose as high as eighty-five degrees in the shade; but for the most part the temperature was rather below than above the summer mean.

The first case was excited by indigestible food, and the subject was a favorable one for cholera—a gross feeder and intemperate. Mr. M. is the only other white person who has died, and respecting him it is interesting to remark, that nearly all his father's family have died young, several of them of bowel complaints, and that his residence was near a large pond, into which all the water runs that falls upon his barn and stable yards. Besides this, south of his house, and within a stone's throw of the house of his brother, where two fatal cases occurred, there is a second pond, on the margin of which the stables and a cotton-gin are built. The stench from these ponds was such as to attract the attention of all passers-by, before cholera broke out in these families.

If we analyze the testimony afforded by these cases of cholera we shall find in it something that favors the contagiousness of the disease, but much more that goes to prove it to be of local origin. Most of the subjects resided on public highways, and it is impossible to say that the poison of the pestilence was not brought to them by some traveler from Nashville, where the epidemic was prevalent; but they also, as we have seen, lived in damp, confined, dirty houses, in the neighborhood of ponds, and amid all the conditions favorable to the development of malaria. It cannot be shown that there was any intercourse between the inmates of the families in which the disease successively appeared; and it is certain that it was not communicated to those who nursed the sick, or aided in the burial of the dead. That it ceased so suddenly on the desertion of their homes by the affected families, is an instructive fact. The only other remark we shall make is, that none of the patients who died were seen by a physician until they were in collapse, and that uniformly when the premonitory symptoms have been regarded the disease has proved easily manageable.

CHOLERA AS INFLUENCED BY LOCALITY.

In our last number, we fell into an error, which we deem it proper to correct. We stated that the point, in Nashville, where cholera was most fatal, was the hill south of the University. We have been informed that it was not on the *hill*, but in a valley, in a southwest direction from the University, that the disease prevailed with such malignity.—

While ravaging this neighborhood, it scarcely prevailed in the old quarters of the city.

On this subject, we find some interesting facts in a St. Louis paper. The writer remarks: "Some particular spots have been particularly known as infected districts, and have been nearly swept of their population. At the corner of Washington avenue and Ninth street, opposite to the late ground of the caravan, several houses were left tenantless, the disease having taken off every one of the inmates. In a part of the city known as Shephard's grave yard, there have been from 80 to 100 deaths by the disease. The latter place is described as abounding in aliment for pestilence. In the former, also, there is a great accumulation of offensive matter."

Papers of a later date, from that city, however, furnish facts of an opposite character. They state that in the localities where cholera was for a time so fatal, the pestilence has ceased, and was prevailing in districts inhabited by people in the best circumstances. While thus desolating the city, and attacking and carrying off citizens of note, it was sparing the immigrants in their crowded, filthy, wretched quarters at quarantine, on the river a short distance below.

On another point, the St. Louis Union, from which we have quoted, gives some affecting statistics. In the whole history of cholera we are not sure that we have remarked anything more affecting than the facts stated in the following paragraphs:

It has already been stated in our paper that the number of deaths in this city for the week ending July 2d, were 903; of these the deaths by cholera were 619; those of five years and under, 230. In the previous week, ending June 25th, the total was 764; by cholera, 595; of five years and under, 171.

The most remarkable feature of this malignant pestilence is, that the greatest number of its victims are from those in middle life—the period most exempt of all others from death by ordinary diseases—those in the vigor and strength of manhood—the father and mother, at the period when the young family is most numerous and most needing aid and guidance, are the principal food for the destroyer. In the first week, ending 25th ult., those between 20 and 40 years were 251, or exceeding five-twelfths of the whole number, and exceeding the deaths of the same ages by other diseases nearly eight times. While of 5 years and under, the deaths by cholera were only about equal to deaths of the same age by other causes.

In the week ending July 2d, the number of deaths by cholera, between 20 and 40, were 336, or much exceeding half of the whole number.

It is said that a very large portion of the deaths, the conjecture is about three-fourths, were foreigners, badly provided with the comforts of life, and perhaps many of them not having seasonable medical attendance.

ELECTRICITY AND CHOLERA.

M. Audrand has communicated to the French Academy of Sciences the result of a series of observations, made by him, on the electrical state of the atmosphere during the late prevalence of cholera at Paris; from which he concludes that the epidemic is caused by a deficiency of electricity. He remarked that a large electrical machine, which threw out brilliant sparks in quick succession, when the atmosphere was in a favorable state, appeared to be powerless during the reign of the epidemic. All this time, he adds, there were no thunder-storms. At length, on the evening of the 8th of June, "a storm announced to Paris that electricity had re-entered its domain;" his electrical machine began to give out sparks again, and "in his view cholera was vanishing with the cause that produced it."

In Lexington, we were engaged in a course of lectures on electricity at the time when cholera broke out in that city, and were struck by the fact here noted by M. Audrand. We were unsuccessful in our attempts to excite the fluid in a very powerful machine, and the fact was recorded in the Transylvania Journal of that summer (1833). But in one most important particular our experience differs from that of M. A. Thunderstorms were frequent about the time when we found the machine most inefficient, and recurred every few days, and, more than once, two or three times in a single night, during the first days of the epidemic. That cholera often takes its rise in a peculiar state of the atmosphere—a state characterized by the absence of electricity, appears to be well established, but when once it has gained foothold in a place, it seems to set at defiance every state of weather, pursuing its uninterrupted march through sunshine and storm; when the barometer is high and when it is low; in a humid and sultry, and in a dry and serene atmosphere. And having run its course, without reference to any law of which we have any knowledge, without any sensible change in the air, it begins to decline, and finally disappears. Indeed, up to the present time, we know little of the cause of cholera.

CLINICAL TEACHING—THE NEW AMPHITHEATER AT THE HOSPITAL.

We congratulate the friends of medical science, throughout the West and South, on the auspicious prospects of clinical teaching, in the city of Louisville. The City Council have ordered the erection of a building, in connection with the hospital, which will be all that can be desired for the purpose. The contractors are now at work, and are pushing the building forward, so energetically that there is no doubt of its completion, by the time provided in the contract—the 20th of October.

This new Amphitheater is at the eastern end of the Louisville Marine Hospital, and communicates with the wards of that institution. Its form is octagonal. The diameter of the lecture room is fifty feet, and the height of the ceiling is twenty feet. The space for the rostrum is ten by twenty-two feet. The room is abundantly lighted by an ample sky-light. The seats, instead of ascending in a straight line from the rostrum, ascend in a concave, somewhat resembling the concavity of a bowl. The advantages of this arrangement are obvious—in such an arrangement there can be but little choice of seats, for the highest, or the one farthest from the rostrum, affords as much facility for seeing all that is essential to be seen, as the lowest one does. There is but one other amphitheater of this kind, that we know of, and that is in the Royal Institution in London. That one has given so much satisfaction to auditors, spectators and teachers, that it is strange, that its advantages have not been more frequently imitated.

The Amphitheater of the Marine Hospital will very conveniently seat four hundred students, and offers abundant attractions to all who desire to enjoy, what must be the basis of all successful medical teaching—Clinical instruction. In this department of medical education, the medical school of Louisville will offer to students, in the ensuing session, facilities second to no other in the Union. The celebrity of the Professor of the Theory and Practice of Medicine—Professor Bartlett—is so widely spread, that it is unnecessary for us to dilate upon the services he will be able to render his classes, in the fields of clinical instruction. In this department he certainly has no superior in this country, and his connection with the school of Louisville, possessing as it does, the most ample means for clinical teaching, is destined to exert a very happy influence upon the interests of western medicine.

We are gratified to hear, that under the present arrangements of the hospital, the internal affairs of the institution are in a highly prosperous condition. We are assured, from various quarters, that the hospital has

never been in as good a condition as it is at present, and there is abundant reason for supposing that these good fruits will rather grow than lessen.

To students at a distance, we beg leave to express our belief that the facilities of the Louisville school for medical instruction have at no time been equal to those now possessed by the institution, and that the session of 1849 and '50 will long be remembered as the commencement of a race of the most honorable usefulness. B.

PROCEEDINGS OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

This association commenced its second meeting, at Cambridge, Mass., August, 1849. From the published proceedings, the meeting was one of unusual interest, and we have read them with more than ordinary gratification. We regret, however, that our limited space will permit us to give but a very meagre view of the chief topics before the association.

The meeting commenced its sessions, on the 14th day of August.—Professor Joseph Henry, the President of the Association, was present, and presided over its deliberations. In taking the chair, Prof. Henry made some explanatory remarks, on the objects of the association, which we subjoin, as indicative of the character of the proceedings. Professor Henry remarked: "We are not assembled to exhibit our knowledge of other men's thoughts, but to present to each other for consideration and friendly discussion, new truths—the results of original investigation—to inform each other of what we have done during the past year, and to ask assistance, advice and co-operation—to elicit, by intercourse and the collision of mind, new suggestions, to be proved or disproved during the next year. It is to be presumed, therefore, that the time of the association will not in any case be occupied with mere popular expositions of well known subjects."

In the narrow space to which we are limited, we can give but little more than the titles of the leading and most important subjects introduced to the association.

The first paper read, was on the *Aurora Borealis;* by Prof. Secchi, of Georgetown College. Its facts are very curious and interesting.

The second paper was read by Prof. Gray, and was devoted to a no

tice of that singular plant, called the *Polar plant*, or *Silphium Lacinatum.*

The fourth paper was prepared by Prof. Troost, on the *Crinoids.*— That gentleman has probably the largest and finest collection of Crinoids to be found in any cabinet, and we are pleased to learn that he is preparing a monograph upon their characteristics.

The seventh communication was a lecture, by Prof. Agassiz, "*On the structure of Coral Animals.*"

On the second day, papers were read on "*The Prime Meridian,*" by Lieut. Davis; on "*The results obtained in Geodysy by the application of the theory of the least squares,*" by Professor Bache; on "*Boltonite,*" by L. Saemann, Esq.,—the latter of which called forth some interesting remarks, from Prof. Silliman, Jr., recently elected to the chair of Chemistry in the Louisville Medical School. Prof. Agassiz also read papers on "*The zoological character of young mammalia,*" and "*The vegetable character of Xanthidium.*" Dr. Weightman read a communication on "*The Valerianate of Morphia,*" a salt of opium, supposed to possess many advantages over any other preparation of opium.

We are compelled to pass, in silence, many of the proceedings of the second day. On the third day of the session, Prof. Silliman, Jr., read a number of interesting analyses, made by him, to the association. Prof. Bache contributed an oral communication "*On the progress of the survey of the coast of the United States.*" Prof. Henry D. Rogers read an able paper "*On the origin of the drift, and of the lake and river terraces of the United States and Europe, with an examination of the laws of aqueous action connected with the inquiry.*" The theory of Prof. Rogers was ably supported, but it does not account for all the phenomena of the geological riddle which it undertakes to explain.

On the fifth day, Dr. Burnett read a valuable paper "*On some new points in the Morphology of cells, touching its analogy to that of the ovum.* This paper called forth an animated and instructive discussion.

Prof. Walter R. Johnson read a valuable paper "*On the economic values of American and British coals.*"

We regret that several of the papers, containing the report of the proceedings of the association, have failed to reach us, and we are, consequently, unable to refer fully to the regular order of the business.— We hope, however, to do justice to the subject, in our next number.

B.

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